Vol. 993 Number 3

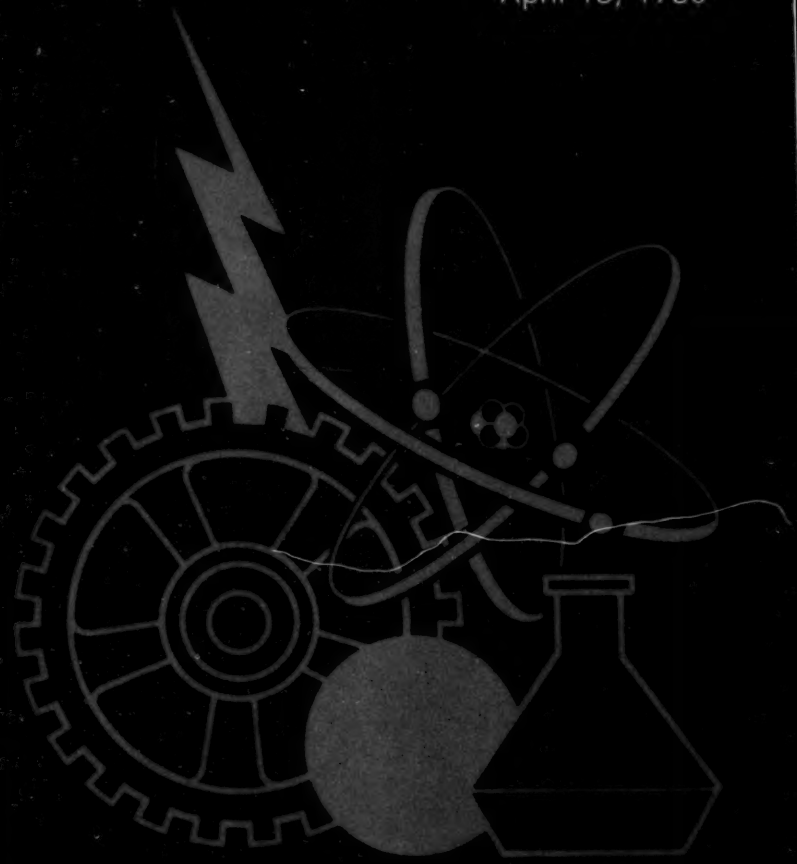
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

April 15, 1980



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

April 15, 1980 Volume 993 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Jan. 28, 1980. *Commissioner of Patents and Trademarks.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before May 9, 1980:

Berman, Nelson, 1006 Iliff St., Pacific Palisades, Calif. 90272
Brilhart, Gladden, L., 8206 Galahad Ct., Annandale, Va. 22003
Cortina, Anibal J., 6444 Lakeview Dr., Falls Church, Va. 22041
Danison, Walter C. Jr., 6914 Lodestone Ct., Alexandria, Va. 22306
Dompieri, Arnold B., 92 Belmont Ave., North Plainfield, N.J. 07060
Forman, Leonard, 2815 Hewitt Ave., Silver Spring, Md. 20906
Friedman, Reuben, 1821 Reedie Dr., Silver Spring, Md. 20902
Geoghegan, Edgar W., 806 Crescent Dr., Alexandria, Va. 22302
Ghose, Rabindra N., 8167 Mulholland Terr., Los Angeles, Calif. 90046
Gort, Randall J., 1904 Fremont Ave., South Minneapolis, Minn. 55403
Hadland, Wayne O., P.O. Box 179, Moss Beach, Calif. 94038
Hillman, James P., 4119 Windsor Rd., Murrysville, Pa. 15668
Lake, Roy, 1221 Burton St., Silver Spring, Md. 20910
Luccarelli, Peter A., Jr., 121 W. 60th St., #4F, New York, N.Y. 10023
Mack, John H., 7208 Hitching Post Lane, Hyattsville, Md. 20783
Mitchell, James C., 727 Otis Pl., NW., Washington, D.C. 20010
Raiford, John D., 1120 Fiske St., Pacific Palisades, Calif. 90272
Roberts, Charles F., 518 S. 24th St., Arlington, Va. 22202
Shalek, James H., 3104 Kelton Ave., Los Angeles, Calif. 90034
Tillman, Murray, 10514 Cascade Pl., Silver Spring, Md. 20902
Varndell, Ralph E., Jr., 632 S. 24th St., Arlington, Va. 22202
Wagner, Allen B., 180 El Dorado Ave., Berkeley, Calif. 94707

LUTRELLE F. PARKER,
Mar. 17, 1980. *Chairman, Committee on Enrollment.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,467,683, Re. S.N. 101,491, Filed Dec. 7, 1979, Cl. 260/403, METAL ORGANOPHOSPHORUS COMPOUNDS, Samuel Edward Harson, et al., Owner of Record: *Borax Holdings Limited, Manchester, England,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 117

3,576,776, Re. S.N. 092,376, Filed Nov. 8, 1979, Cl. 260/22, ADHESIVE APPLICATOR CRAYONS, Janos A. Muszik, et al., Owner of Record: *Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Germany,* Attorney or Agent: Nelson Littell, et al., Ex. Gp.: 144

3,861,928, Re. S.N. 114,677, Filed Jan. 23, 1980, Cl. 106/89, HYDRAULIC CEMENT AND METHOD OF PRODUCING SAME, Thomas C. Slater, et al., Owner of Record: *The Flintkote Co., White Plains, N.Y.,* Attorney or Agent: Granville M. Brumbaugh, et al., Ex. Gp.: 113

3,896,435, Re. S.N. 118,459, Filed Feb. 4, 1980, Cl. 343/9 R, SIMPLE RADAR FOR DETECTING THE PRESENCE, RANGE AND SPEED OF TARGETS, James N. Constant, Owner of Record: *Inventor,* Attorney or Agent: Walton Eugene Tinsley, et al., Ex. Gp.: 222

3,961,650, Re. S.N. 103,604, Filed Dec. 14, 1979, Cl. 139/291 R, WEAVING METHOD AND MACHINE, Ruthard Marowsky, Owner of Record: *Inventor,* Attorney or Agent: Charles W. Helzer, Ex. Gp.: 353

4,051,142, Re. S.N. 114,864, Filed Jan. 24, 1980, Cl. 546/298, 1-ARYL-4-PYRIDONES, Glenn R. Carlson, Owner of Record: *Rohm and Haas Company, Philadelphia, Pa.,* Attorney or Agent: Robert A. Doherty, et al., Ex. Gp.: 121

4,063,842, Re. S.N. 115,771, Filed Jan. 28, 1980, Cl. 408/146, ADJUSTABLE BORING BAR, George G. Barkley, et al., Owner of Record: *Kennametal Inc., Latrobe, Pa.,* Attorney or Agent: Lawrence R. Burns, Ex. Gp.: 324

4,067,071, Re. S.N. 110,553, Filed Jan. 8, 1980, Cl. 004/145, BATHTUB, WALL AND CEILING LINER ASSEMBLY, Murray Altman, et al., Owner of Record: *Thermasol Ltd., Leonia, N.J.,* Attorney or Agent: Lawrence I. Lerner, et al., Ex. Gp.: 243

4,069,501, Re. S.N. 112,440, Filed Jan. 16, 1980, Cl. 358/44, SOLID STATE VIDEO CAMERA, Seisuke Yamanaka, Owner of Record: *Sony Corporation, Tokyo, Japan,* Attorney or Agent: Lewis T. Steadman, et al., Ex. Gp.: 223

4,069,580, Re. S.N. 112,757, Filed Jan. 17, 1980, Cl. 30/47, SAFETY RAZOR WITH FLEXIBLE BLADE CARTRIDGE, Cyril A. Cartwright, et al., Owner of Record: *Warner-Lambert Company, Morris Plains, N.J.,* Attorney or Agent: Jeremiah J. Duggan, Ex. Gp.: 323

4,075,308, Re. S.N. 116,613, Filed Jan. 29, 1980, Cl. 423/478, PRODUCTION OF CHLORINE DIOXIDE AT HIGH EFFICIENCY, W. Howard Rapson, et al., Owner of Record: *Erco Industries Limited, Islington, Ontario, Canada,* Attorney or Agent: John F. Smith, et al., Ex. Gp.: 113

4,120,524, Re. S.N. 113,716, Filed Jan. 21, 1980, Cl. 292/263, DEVICE FOR OPENING, CLOSING AND LATCHING A VENT CLOSURE MEMBER, Elwood E. Buck, Jr., Owner of Record: *D G Shelter Products Company, Industry, Calif.,* Attorney or Agent: Edward F. Jaros, Ex. Gp.: 355

4,161,160, Re. S.N. 113,950, Filed Jan. 21, 1980, Cl. 123/1 A, FUEL ADDITIVE INJECTION SYSTEM FOR DIESEL ENGINES, George E. Hicks, et al., Owner of Record: *Caterpillar Tractor Co., Peoria, Ill.,* Attorney or Agent: William A. Van Santen, et al., Ex. Gp.: 342

4,167,261, Re. S.N. 114,792, Filed Jan. 16, 1980, Cl. 248/270, WINDOW SHADE, CURTAIN, OR DRAPERY ROD CORNER BRACKET, Bernard Bartels, Owner of Record: *Inventor,* Attorney or Agent: Eugene F. Malin, et al., Ex. Gp.: 355

PATENT NOTICES

Certificates of Correction for the Week of April 15, 1980

Re. 30,142	4,154,000	4,174,083	4,179,987
3,808,050	4,156,285	4,174,723	4,180,413
3,813,695	4,156,757	4,175,209	4,180,602
3,886,472	4,156,784	4,175,578	4,180,654
4,012,413	4,157,088	4,175,657	4,180,766
4,027,041	4,158,132	4,175,944	4,180,836
4,057,320	4,159,280	4,176,128	4,181,084
4,073,741	4,159,525	4,176,664	4,181,150
4,088,478	4,164,039	4,176,865	4,181,819
4,098,992	4,164,492	4,177,367	4,182,023
4,107,692	4,165,164	4,177,379	4,182,097
4,122,452	4,165,977	4,177,520	4,182,286
4,127,491	4,166,179	4,178,078	4,182,799
4,127,598	4,166,681	4,178,372	4,182,800
4,127,832	4,166,698	4,178,574	4,183,143
4,133,240	4,167,119	4,178,893	4,184,232
4,137,497	4,167,826	4,179,086	4,184,385
4,143,451	4,168,876	4,179,090	4,184,432
4,144,332	4,169,092	4,179,167	4,184,439
4,146,878	4,170,829	4,179,247	4,184,530
4,151,368	4,171,203	4,179,396	4,184,594
4,152,338	4,172,231	4,179,437	4,185,083
4,152,769	4,173,139	4,179,440	4,185,193
4,152,771	4,173,273	4,179,759	4,185,210
4,153,534	4,173,876	4,179,894	4,185,343
			4,187,052

Disclaimers

3,219,623.—*Frank M. Berardinelli,* Millington, N.J. and *Thomas J. Dolce,* Stirling, N.J. STABLIZATION OF OXYMETHYLENE COPOLYMERS WITH A HYDROXY CONTAINING REACTANT. Patent dated Nov. 23, 1965. Disclaimer filed Jan. 25, 1978, by the assignee, *Celanese Corporation.*

Hereby enters this disclaimer to claims 1 through 10 inclusive of said patent.

3,628,864.—*John R. Fessenden* and *Stephen J. Wenthe,* Rochester, N.Y. APPARATUS FOR FORMING A DEVELOPABLE PATTERN ON LIGHT-SENSITIVE FILM CARRIED IN A CASSETTE. Patent dated Dec. 21, 1971. Disclaimer filed Feb. 19, 1980, by the assignee, *Eastman Kodak Company.*

Hereby enters this disclaimer to claims 1 through 10 of said patent.

3,889,848.—*Ronald J. Ricciardi,* Garfield, *Angelo Ferrara,* Fairfield, and *Alexander A. Urban,* Park Ridge, N.J. AUTOMATICALLY CONTROLLED WEIGH FEEDING APPARATUS. Patent dated June 17, 1975. Disclaimer filed Feb. 14, 1980, by the assignee, *Acrison, Inc.*

Hereby enters this disclaimer to claims 1 to 5 of said patent.

Disclaimer and Dedication

3,832,797.—*Richard W. Smedley,* Joliet, Ill. FISHING FLOAT. Patent dated Sept. 3, 1974. Disclaimer and dedication filed Jan. 2, 1980, by the inventor.

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the US. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

DEPARTMENT OF THE ARMY, OTJAG
Chief, Intellectual Property Division, Room 2D 444, Pentagon, Washington, D.C. 20310

Patent application 6–003,149. Novel Microscope Slice Smoker. Filed Jan. 15, 1979.

Patent application 6–003,435. Shape Charge Agent Disposing Process. Filed Jan. 12, 1979.

Patent application 6–009,999. Gun Sight. Filed Feb. 7, 1979.

Patent application 6–012,418. Helicopter Performance Calculator. Filed Feb. 15, 1979.

Patent application 6–027,203. Vent Actuated Shorting Switch. Filed Apr. 5, 1979.

Patent application 6–028,040. Crashworthy Fuel System. Filed Apr. 9, 1979.

Patent application 6–030,203. Aeroload Torque Simulator. Filed Apr. 16, 1979.

Patent application 6–034,062. Variable Length Linkage. Filed Apr. 27, 1979.

Patent application 6–034,088. Trajectory Shaping of Anti-Armor Missiles Via Tri-Mode Guidance. Filed Apr. 27, 1979.

Patent application 6–035,955. Reaction-Jet Torquer. Filed May 4, 1979.

Patent application 6–040,815. Semi-Active Missile Seeker Circuitry Compatible With Conventional Coherent and or Spread Spectrum Radars. Filed May 21, 1979.

Patent application 6–042,667. Rocket Tube Launcher With Cast-In Place Tube Support Bulkhead. Filed May 25, 1979.

Patent application 6–046,420. Microwave Frequency Discriminator. Filed June 7, 1979.

Patent application 6–050,250. Simple Method of Switching an AC Line. Filed June 20, 1979.

Patent application 6–052,045. CO Chemical Laser Produced by Laser Induced Chemistry of $CSCl_2$. Filed June 25, 1979.

Patent application 6–078,628. Apparatus for the Controlled Discharge of a Charged Object. Filed Sept. 25, 1979.

Patent application 927,704. Control Rod Roll-Over Limiter. Filed July 24, 1978.

Patent application 944,819. Crashworthy Fuel Tank Repair. Filed Sept. 22, 1978.

Patent application 948,718. Rotor Blade Root End Attachment and Method of Manufacture. Filed Oct. 5, 1978.

Patent 4,100,102. Composition for Screening Infra-Red Radiation. Filed Apr. 6, 1965. Patented July 11, 1978. Not available NTIS.

Patent 4,140,061. Short-Range Discarding-Sabot Training Practice Round and Self-Destruct Subprojectile Therefor. Filed June 6, 1977. Patented Feb. 20, 1979. Not available NTIS.

Patent 4,155,052. Wire Electrode TEA Laser. Filed Nov. 1, 1976. Patented May 15, 1979. Not available NTIS.

Patent 4,155,087. Radar Receiver for Detecting Coded Information Buried in Radar Echoes. Filed Apr. 20, 1973. Patented May 15, 1979. Not available NTIS.

Patent 4,155,472. Tire Transfer Arm. Filed Nov. 18, 1977. Patented May 22, 1979. Not available NTIS.

Patent 4,155,554. Miniature Target Tank. Filed May 20, 1977. Patented May 22, 1979. Not available NTIS.

Patent 4,156,135. Electronic Heterodyning in an Optical Detector. Filed Nov. 11, 1976. Patented May 22, 1979. Not available NTIS.

Patent 4,156,827. Matrix Cathode Channel Image Device. Filed June 19, 1978. Patented May 29, 1979. Not available NTIS.

Patent 4,157,054. Hypervelocity Rocket System With Velocity Amplifier. Filed Mar. 17, 1978. Patented June 5, 1979. Not available NTIS.

Patent 4,157,270. Hydrogen Gas Generator From Hydrazine Ammonia. Filed Sept. 12, 1977. Patented June 5, 1979. Not available NTIS.

Patent 4,157,299. Two-Phase Filter and Thin Layer Chromatography Process. Filed Jan. 22, 1976. Patented June 5, 1979. Not available NTIS.

Patent 4,157,685. Warhead Fuze Seeker. Filed Nov. 9, 1965. Patented June 12, 1979. Not available NTIS.

Patent 4,157,927. Amine-Boranes as Hydrogen Generating Propellants. Filed Mar. 6, 1978. Patented June 12, 1979. Not available NTIS.

Patent 4,158,323. Training Flare Dispensing System. Filed Jan. 27, 1978. Patented June 19, 1979. Not available NTIS.

Patent 4,158,506. Automatic Determination of the Polarization State of Nanosecond Laser Pulses. Filed Nov. 15, 1977. Patented June 19, 1979. Not available NTIS.

Patent 4,158,805. Method and Apparatus for Testing Crystal Elements. Filed Jan. 19, 1978. Patented June 19, 1979. Not available NTIS.

Patent 4,158,832. Seismic Apparatus for Discrimination Between Track-Type Vehicles and Wheel-Type Vehicles. Filed June 19, 1961. Patented June 19, 1979. Not available NTIS.

Patent 4,158,960. Microcircuit Fire Leak Test Apparatus. Filed May 4, 1978. Patented June 26, 1979. Not available NTIS.

Patent 4,159,476. Ejection Fuze. Filed Aug. 19, 1954. Patented June 26, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half St., SW., Washington, D.C. 21324

Patent application 6–023,371. Near Millimeter Wavelength Modulator and Tunable Oscillator. Filed Mar. 23, 1979.

Patent application 6–046,073. Electro-Dynamic Laser With Acoustic Absorbing Electrode. Filed June 6, 1979.

Patent application 6–055,423. High Power Microwave Integrated Circuit Receiver Protector With Integral Sensitivity Time Control. Filed July 6, 1979.

Patent application 6–055,425. Stepped-Rod Ferrite Microwave Limiter Having Wide Dynamic Range and Optimal Frequency Selectivity. Filed July 6, 1979.

Patent application 6–058,335. Method and Apparatus for Temperature Data Acquisition. Filed July 17, 1979.

Patent application 6–061,558. Method of Fabricating Cadmium Electrodes. Filed July 27, 1979.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch, Administration Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6–043,976. Rotating Field Plot Row Marker. Filed May 30, 1979.

Patent application 6–052,657. Iron Rod Technique for Measuring Surface Soil Watertables. Filed June 27, 1979.

Patent application 6–053,474. Treatment of Cottonseed Meals Followed by Extraction With Certain Solvents To Remove Gossypol. Filed June 29, 1979.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 829,122. Modular Assembly of a Photovoltaic Solar Energy Receiver. Filed Aug. 30, 1977.

Patent 4,142,868. Wear Compensating Seal Means for Rotary Piston Coal Feeder. Filed May 2, 1978. Patented Mar. 6, 1979. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent application 6–063,261. Clot Lysing Timer. Filed Aug. 2, 1979.

Patent 3,839,641. System for Whole Body Imaging and Count Profiling With a Scintillation Camera. Filed June 22, 1973. Patented Oct. 1, 1974. Not available NTIS.

Patent 3,993,908. System for Whole Body Imaging and Count Profiling With a Scintillation Camera. Filed June 3, 1974. Patented Nov. 23, 1976. Not available NTIS.

Patent 4,159,333. N-Methyl Levo Benzomorphan Analgesics Having Non-Addictive and Morphine Antagonistic Properties. Filed Sept. 8, 1978. Patented June 26, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent 4,166,921. Flexible Housing, In-Line Electronic. Filed Aug. 29, 1977. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,167,712. Praseodymium Blue-Green Laser System. Filed Jan. 31, 1978. Patented Sept. 11, 1979. Not available NTIS.

Patent 4,168,441. Picosecond Pulse Generator Utilizing a Josephson Junction. Filed Dec. 20, 1977. Patented Sept. 18, 1979. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 6–078,611. Autonomous Navigation System. Filed Sept. 24, 1979.

Patent 3,233,862. Fluid Pressure Balanced Seal. Filed Oct. 3, 1961. Patented Feb. 8, 1966. Not available NTIS.

Patent 4,166,160. Mixed Diamines for Lower Melting Addition Polyimide Preparation and Utilization. Filed Oct. 6, 1977. Patented Aug. 28, 1979. Not available NTIS.

Erratum

All reference to Patent No. 4,194,593 to John Proctor Snow and James J. Callahan, both of Ohio for CYCLIC LUBRICANT DISTRIBUTOR VALVE appearing in the OFFICIAL GAZETTE of March 25, 1980 should be deleted since no patent was granted

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626–7555 Ext. 274
	Sacramento: California State Library	(916) 322–4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242–7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library. Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 23, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-9-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-3-78
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins: Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink: Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-2-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	5-30-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-12-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-31-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	11-16-78
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-16-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	8-21-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	3-20-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-14-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-5-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	1-15-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-18-78
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	10-2-78

Expiration of patents: The patents within the range of numbers indicated below expire during February 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 600, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,076,195 to 3,079,605, inclusive
Plant Patents ..... Numbers 2,224 to 2,231, inclusive

PLANT PATENTS

GRANTED APRIL 15, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,520

ROSE PLANT—MEIGANDOR VARIETY

Marie-Louise Paolino, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Dec. 12, 1978, Ser. No. 968,840

Claims priority, application Belgium, Dec. 28, 1977, 862431

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—22 **1 Claim**

1. A new and distinct variety of Floribunda rose-plant characterized by the fact that

from the physical point of view, the plant with light green adult wood is erect, produces double flowers which are of orpiment color on the inside and yellow on the outside, has rounded petals which are leathery in texture, and dull foliage which is relatively ample and moderately dense; and

from the biological point of view has vigorous vegetation, a great tendency to force, produces flowers of long duration both when cut and on the plant, and average resistance to disease;

substantially as shown and described.

4,521

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gessellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA", Isselburg, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,679

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant as shown and described, known by the cultivar name San Francisco and characterized by the combined features of girl type leaves, star-shaped lilac colored flowers carried on strong and upright stems, vigorous growth habit, compact bouquet and habit, and by its non-dropping, long lasting flowers.

PLANT PATENTS

GRANTED APRIL 15, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,549
ROSE PLANT—ELIZABANDOR VALERET
Marie-Louise Paolino, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.
Filed Dec. 12, 1978, Ser. No. 968,369
Classification: Int. Cl.² A01H 5/00
U.S. Cl. PP.—72 1 Claim

1. A new and distinct variety of Floribunda rose plant substantially as shown.

4,550
APRICOT VIOLET PLANT
Kenneth Griffiths, Tredegar, Gwent, Wales, assignor to Unwins (Seeds) Limited, Histon, Cambridge, England
Filed Dec. 12, 1978, Ser. No. 968,370
Int. Cl.² A01H 5/00
U.S. Cl. PP.—72 1 Claim

1. A new and distinct variety of Alpine violet plant substantially as shown and described.

PATENTS

GRANTED APR. 15, 1980

ERRATA

For CLASS	See PATENT NO.
433–032	4,197,641
433–011	4,197,642
433–020	4,197,643
433–007	4,197,644
433–128	4,197,645
433–097	4,197,646
433–159	4,197,647
433–003	4,197,648
368–315	4,197,697
368–291	4,197,698
072–264	4,197,757
192–042	4,197,885
126–429	4,197,993
248–154	4,198,020
296–165	4,198,089
430–222	4,198,235
430–306	4,198,236
430–415	4,198,237
430–286	4,198,238
430–566	4,198,239
430–570	4,198,240
430–284	4,198,241
430–286	4,198,242
555–406	4,198,337
549–089	4,198,339
556–463	4,198,346
426–312	4,198,432
423–450	4,198,469
370–058	4,198,546
328–133	4,198,575
455–015	4,198,600
455–073	4,198,601
455–307	4,198,602
455–234	4,198,603
455–260	4,198,604
455–161	4,198,605
367–094	4,198,618

PATENTS

GRANTED APR. 15, 1980

ERRATA

PATENTS

GRANTED APRIL 15, 1980

GENERAL AND MECHANICAL

4,197,592

SPORT GLOVE

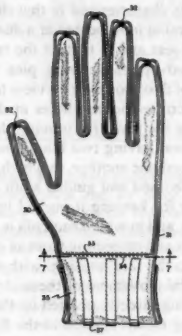
Michael Klein, New York, N.Y., assignor to Cluett, Peabody & Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 807,045, Jun. 16, 1977, Pat. No. 4,095,292, which is a continuation-in-part of Ser. No. 724,395, Sep. 17, 1976, abandoned. This application May 31, 1978, Ser. No. 911,561

The portion of the term of this patent subsequent to Jun. 20, 1995, has been disclaimed.

Int. Cl.[2] A41D *19/00*

U.S. Cl. 2—161 A **4 Claims**



1. A sport glove or the like comprising

(a) a highly elastic, contractile inner glove shell formed of a knitted fabric,

(b) said inner glove shell being of an initial contracted size and being sufficiently elastic whereby upon insertion of the hand the inner glove will expand to cause the hand to be tightly confined to provide a tingling sensation while the hand is not constricted against required movements for use in sporting activities,

(c) an outer glove shell completely surrounding and enveloping said inner shell,

(d) means securing said inner and outer glove shells by substantial overall attachment of said outer shell to said inner shell enabling the assembled gloves to be donned and doffed as a unitary structure,

(e) said outer glove shell being constructed of stretch materials which are much less elastic than the fabric of the inner shell, said materials permitting it to expand and contract and move together with the expansion and contraction of said highly elastic contractile inner glove shell and being of an initial contracted size substantially the same as the contracted size of said inner glove shell whereby upon insertion of the hand the inner glove shell will expand and the outer glove shell will stretch about the hand and upon removal of the hand from the inner glove shell, the outer glove shell will contract with the inner glove shell to the contracted size of the inner glove shell.

4,197,593

ROTATABLY POSITIONABLE HEART VALVE AND METHOD

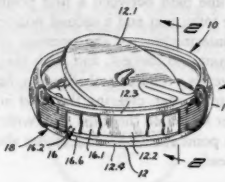
Robert L. Kaster, Wayzata; Donald N. Mehl, Minnetonka, and Kathryn A. Klemetsrud, New Hope, all of Minn., assignors to Kastec Corporation, Plymouth, Minn.

Filed Mar. 3, 1978, Ser. No. 882,972

Int. Cl.[2] A61F *1/22*

U.S. Cl. 3—1.5 **24 Claims**

1. An implantable heart valve having a valve body and an exterior suturing ring within which the valve body may be rotatably adjusted following suturing of the ring to a natural heart tissue orifice, the valve body having an exterior annular wall with the suturing ring disposed circumferentially of the wall, the valve including slip ring means interposed between the suturing ring and the wall and circumferential binding



means binding the suturing ring and slip ring to the valve body wall, at least one of the binding means and slip ring means being heat-relaxed under controlled conditions to reduce the initial binding force of the binding means to thereby facilitate controlled rotational positioning of the valve body within the suturing ring.

4,197,594

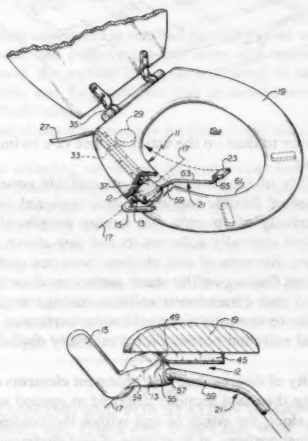
HYGIENE APPARATUS FOR TOILETS

Peter Butterfield, 1311-2nd W., Seattle, Wash. 98119

Filed Jul. 24, 1978, Ser. No. 927,725

Int. Cl.[2] A47K *3/22*

U.S. Cl. 4—7 **7 Claims**



1. A hygiene apparatus adapted for use with a conventional toilet which includes a toilet bowl and a toilet seat, comprising:

support means, which includes handle means positioned in the general area of the rim of the toilet bowl, and movable between first and second positions;

means supplying a washing fluid, such as water, to said support means;

elongated fluid carrying arm means connected at one end thereof to said support means and in fluid connection therewith; and

sprayhead means secured to the other end of said arm means, base means mounted on the underside of said seat and

having an angled portion extending approximately in the range of 45°, ±10° relative to the plane of the seat and parallel to the lateral axis thereof,

wherein said support means is rotatably mounted on said angled portion of said base means and is rotatable about a support axis which is at an angle of approximately in the range of 45°, ±10° relative to the horizontal plane of the toilet seat, and wherein said sprayhead means is positioned a sufficient distance from said axis of rotation by said fluid carrying carrying arm means that the sprayhead means follows a line path between a first position beneath the rear of the toilet seat and a second position which is substantially intermediate of the opening of the toilet seat near the front end thereof, and such that said sprayhead means moves in a relatively shallow arc beneath the opening of the toilet seat, clearing the fluid in the toilet bowl and the user seated on the toilet seat, with the focus of the arc being a point at least several inches above the plane of the toilet seat.

4,197,595

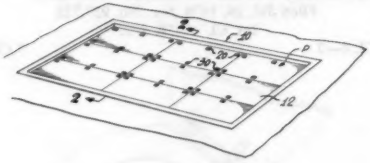
COVER FOR SWIMMING POOLS

LeRoy M. Dearing, 12324 Ventura Blvd., Studio City, Calif. 91604

Continuation of Ser. No. 611,137, Aug. 8, 1975, abandoned. This application Nov. 18, 1977, Ser. No. 852,792

Int. Cl.[2] E04H *3/19*

U.S. Cl. 4—172.12 **7 Claims**



1. A cover to float on the water surface of a swimming pool comprising:

a plurality of separate foldable or coilable cover sections formed of flexible buoyant plastic material including a multiplicity of air cells and having peripheral marginal portions normally adjacent to and just above the water surface, the area of said sections between said marginal portions floating on the water surface, said sections being shaped and dimensioned to be assembled in contiguous relation to one another on said water surface so that some of said marginal portions form mutually opposing edges; and

a plurality of discrete buoyant abutment elements of greater density than said sections disposed at spaced apart locations along the edges of and within the confines of said marginal portions, at least some of said abutment elements being disposed on those marginal portions that form opposing edges and being arranged for engagement with the abutment elements on an opposing edge of an adjacent section;

said abutment elements including first members each comprising a plate overlying the top surface of one of said sections, second members each comprising a plate underlying the bottom surface of said one of said sections, and fastening means for rigidly connecting said plates to said sections;

said abutment elements defining mutually interlockable pocket means formed by spaced apart portions of outer edges of said plates for limiting relative vertical displacement of opposing adjacent sections.

4,197,596

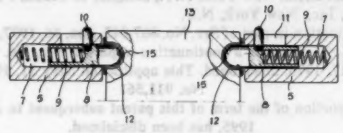
COVER FOR TOILET BOWLS

Giuseppe Fantetti, Via Zamboni 83, Brescia, Italy

Filed Oct. 6, 1978, Ser. No. 950,882

Int. Cl.[2] A47K *13/00, 13/12*

U.S. Cl. 4—236 **2 Claims**



1. A cover for toilets characterized in that the actual cover itself pivots on two parallel tabs located at a distance from one another on the resting seat and in that on the tabs of said seat there are mounted two opposed spring pins which can be moved in the manner of door bolts with a view to engaging the heads thereof in two corresponding holes made in the toilet fixture and constituting the pivot for moving the seat and the cover the tabs on the seat having two blind housings in them, directed and open toward one another, in which, in each of the said housings, there is housed and guided a pin acted upon by a thrust spring suitable for keeping it pushed toward the outside of the said housing, and in which each pin is provided with a gripping lug guided in and projecting from an oblong slot cut radially with respect to the said housing, with said lug determining the limits of axial movement of the said pin said cover bearing the seat and being directly pivoted on the toilet fixture without any intervening means applied to the fixture.

4,197,597

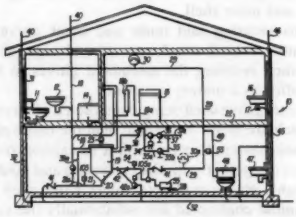
WATER RECYCLING WITH SOLIDS AND FOAM REMOVAL

Ed P. Toms, Arlington, Va., assignor to The Water-Cyk Corporation, Vienna, Va.

Continuation-in-part of Ser. No. 707,340, Jul. 21, 1976, Pat. No. 4,115,879. This application Sep. 25, 1978, Ser. No. 945,475

Int. Cl.[2] E05F *5/18*

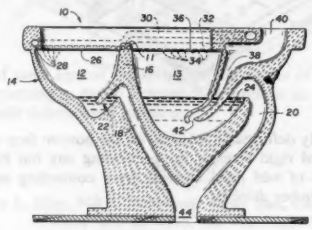
U.S. Cl. 4—300 **11 Claims**



1. A water conservation system comprising: means distributing clean water to selected household facilities for use therein; drain means in said selected facilities other than facilities which have their primary function for the disposal of human waste for delivering said water in the form of gray water from said selected facilities through a inlet conduit of a settling tank at a level below said facilities for the filtration and gravitational separation of solids therefrom; water pump means associated with said settling tank, said pump means having further conduit means for receiving water from said tank and delivering pressurized water to a storage receptacle having a pressure level sufficient whereby it can deliver gray water to said other facilities; a readily removable filter in said tank immediately below said inlet conduit means; and removable cover means for said tank whereby said removable filter can be removed

and replaced by a fresh filter which is supported immediately below said inlet conduit means.

4,197,598
TOILET
Newton R. Lemmon, 3030 Fairview Rd., Hollister, Calif. 95023
Continuation of Ser. No. 762,607, Jan. 26, 1977, abandoned. This application Apr. 3, 1978, Ser. No. 892,602
Int. Cl.[2] E03D *3/12, 1/14*
U.S. Cl. 4—326 **4 Claims**



1. A siphoning water closet comprising: a toilet bowl having a pair of opposed sides and an inner, substantially straight partition spanning the distance between and coupled to the sides at least adjacent to the widest part of the bowl to define a first reservoir for receiving liquid wastes and a second reservoir for receiving solid wastes;

first means coupled with said first reservoir and including a first trap for placing said first reservoir in fluid communication with a sewer line;

second means coupled with said second reservoir and including a second trap for placing said second reservoir in fluid communication with said sewer line;

third means coupled with said first reservoir for flushing wastes therefrom; and

fourth means coupled with said second reservoir for flushing wastes therefrom independently of the flushing of wastes from said first reservoir, said fourth means including a supply tank having a bottom, said third means including means in the tank and communicating therewith for forming a column of water extending upwardly from said bottom, the water in said column being used to flush the wastes from said first reservoir, wherein said third and fourth means include separate supplies of flush water for said first and second reservoirs, respectively.

4,197,599
WATER-SAVING TOILET BOWL
Kuo L. Tsai, No. 106, Yung Chen Rd., Yung Ho Chen, Taipei, Hsien, Taiwan
Filed Dec. 5, 1978, Ser. No. 966,580
Int. Cl.[2] E03D *11/02, 11/18*
U.S. Cl. 4—424 **3 Claims**

1. A water-saving toilet bowl comprising:

a bowl having an upper reservoir defined therein;

a flush-water inlet means mounted on said bowl;

a main flush inlet defined in said flush-water inlet means to conduct flush-water into said bowl, said main flush inlet being tapered in cross-section so that said inlet has one end narrow with respect to another end thereof, said flush inlet being oriented at an angle with respect to the wall of said bowl to conduct flush water toward the center of said bowl in a stream which does not contact the wall surface of said bowl adjacent said flush-water inlet means;

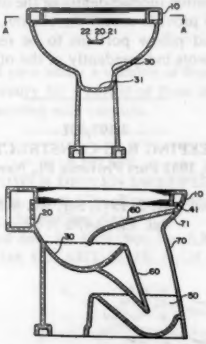
a weir positioned in said flush-water inlet means adjacent said main flush inlet narrow end;

a secondary flush means surrounding said bowl, said secondary flush means having a secondary flush passage with one end thereof being in fluid communication with said flush-water inlet means to receive flush-water therefrom, said weir extending across said secondary flush passage one end so that flush water must pass over said weir to enter said secondary flush passage, said secondary flush passage having another end thereof closed;

a plurality of secondary flush inlets defined in said secondary flush passage, each secondary flush inlet being declined in the same direction as said main flush inlet narrow end and being oriented to initiate a whirlpool along an inside surface of said bowl;

a lower reservoir defining means positioned beneath said bowl and defining a lower reservoir;

a water-passage defining means defining a water passage fluidly connecting said upper reservoir to said lower reservoir and including a guiding plate which is to be contacted by water as that water moves from said upper reservoir to said lower reservoir, and a water-passage wall;



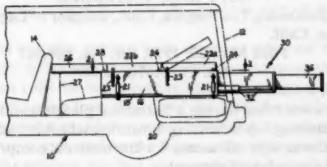
a front plate connected at one end thereof to said water-passage wall and extending away from said water-passage wall over the surface of water contained in said upper reservoir, and having a free end presented toward said main flush inlet;

an air vent defined in an upper portion of said water-passage wall;

said weir delaying movement of flush water into said secondary flush passage so that a main flush enters said upper reservoir via said main flush inlet prior to initiation of a secondary flush via said secondary flush inlet means, said declined orientation of said secondary flush inlet means directing said secondary flush in the form of a whirlpool to mix with said main flush to flush waste through said water passage into said lower reservoir; and

disposal means connected to said lower reservoir for disposing of flush water from said lower reservoir.

4,197,600
CAMPING BED FOR STATION WAGON
John P. Slabic, Rte. 1, Box 440, Trout Lake, Wash. 98650
Filed Sep. 7, 1978, Ser. No. 940,181
Int. Cl.[2] B10P *3/34*
U.S. Cl. 5—118 **8 Claims**



1. A combination bed and storage unit for a station wagon

having a tailgate door, a front seat, and a rear seat which is movable between a raised and a folded position, said unit comprising:

(a) paired, spaced apart, upstanding elongate frame elements which extend between said tailgate door and said rear seat of said station wagon adjacent to the side walls thereof;

(b) a spacer member interconnecting said frame elements at the bottom edge thereof;

(c) a rear pillow which spans said frame elements between the upper edges thereof over substantially their entire length;

(d) said rear pillow being divided into front and rear portions, each of said portions covering substantially one-half of the longitudinal extent of said frame elements; and

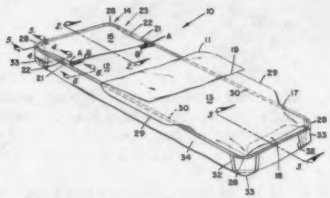
(e) hinge means releasably pivotally securing each of said rear pillow portions independently to said frame elements for allowing each of said pillow portions to be pivoted to a raised position independently of the other of said pillow portions to provide access therebelow, and for allowing each of said pillow portions to be removed from said frame elements independently of the other of said pillow portions.

4,197,601

SLEEPING BAG CONSTRUCTION

Sara B. Maguire, 1952 Port Provence Pl., Newport Beach, Calif. 92660

Filed Nov. 3, 1977, Ser. No. 848,238
Int. Cl.[2] A47G 9/00
U.S. Cl. 5—416 **7 Claims**



1. A sleeping bag, comprising:

(a) a base portion;

(b) a cover portion, the cover portion having a foot section substantially coextensive with the corresponding base portion thereunder, the foot section having a pair of sides joined along the edges thereof to the corresponding edges of the base portion and the balance of the cover portion having a pair of sides, the edge portions of which extend substantially beyond the corresponding pair of edge portions of the base portion, so that when a person's body is disposed between the cover portion and the base portion the edge portions of the cover portion still extend beyond the edge portions of the base portion; and

(c) a head portion having a pocket for containing a pillow therein.

4,197,602

SOFT RAIL WATERBED

Jeb B. Johenning, Los Angeles, Calif., assignor to Laguna, Mfg., Irvine, Calif.

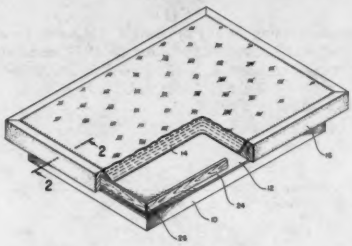
Filed Mar. 20, 1978, Ser. No. 888,067
Int. Cl.[2] A47C 19/00
U.S. Cl. 5—286 **17 Claims**

1. In a waterbed having a horizontal platform and a flexible bag containing liquid forming a mattress which is positioned on the platform, side rail means for the mattress comprising:

an elongated rigid element;

cushioning means forming a side frame member with said rigid element surrounding the top and sides of said rigid element for preventing direct impact with said rigid element by a user of said waterbed; and

means for cushion floating said rigid element comprising



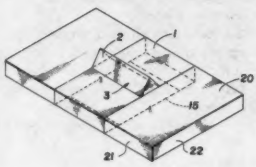
resiliently deformable material on the bottom face of said elongated rigid element for preventing any but the end portions of said rigid element from contacting another rigid member directly.

4,197,603

BED-ASSOCIATED BACK-SUPPORT MEANS

Ronald E. Greenhawk, Sr., 107 Marsh Rd., Wilmington, Del. 19809

Filed Aug. 21, 1978, Ser. No. 934,706
Int. Cl.[2] A47C 21/00
U.S. Cl. 5—431 **8 Claims**



1. A back support means adapted for detachable positioning on a mattress comprising:

(a) a bottom sheet having a width to cover the central portion of a mattress and a length substantially extending the width of said mattress, said bottom sheet having means for detachable affixation to said mattress;

(b) an open-ended pillow receptacle formed by a top sheet having a length substantially extending the width of said bottom sheet, said top sheet being attached to said bottom sheet along the length of said top sheet proximate the edges thereof; and

(c) a pillow of a size substantially conforming to the interior of said open-ended pillow receptacle comprised of a pillow casing filled with rigid shredded polymeric foam, said shredded polymeric foam being comprised of particles having irregular surfaces whereby the pillow retains the configuration caused by intentional body movement.

4,197,604

BI-MODAL PILLOW

Marianne Nakamura, 7220 Fay Ave., La Jolla, Calif. 92037

Filed Jan. 12, 1979, Ser. No. 2,952
Int. Cl.[2] A47G 9/00
U.S. Cl. 5—437 **2 Claims**

1. A bi-modal pillow comprising:

(a) an elongated resilient body comprising a hollow flexible sheath made resilient by being packed with resilient wadding to springload said body into a naturally outstretched position; and

(b) said elongated body having a digit-defining member

defined at each end thereof, said digit-defining members each defining a plurality of extending digits enlarged towards the distal ends thereof to permit the interlocking

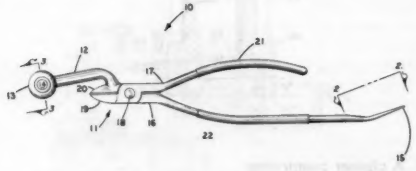
of same against the springloading forces of said resilient wadding to define a closed-loop mode as an alternative to said outstretched position.

4,197,605

GLAZING TOOL

Danny L. King, 618 S. Driftwood, Santa Ana, Calif. 92704

Filed Oct. 23, 1978, Ser. No. 953,470
Int. Cl.[2] E04F *21/28*; B26B *11/00*
U.S. Cl. 7—105 **5 Claims**



1. A hand tool, comprising: a pair of arms mediately secured to one another by a pin for permitting pivotal movement therebetween, that portion of the arms located on one side of the pin having a pair of cooperatively associated cutting edges forming the forward portion of the tool, and that portion of the arms located on the other side of the pin forming a pair of handles which, when moved towards each other, correspondingly bring the cutting edges together into cutting relationship, one of the arms being longer in length than the other arm, the forwardmost portion of the longer arm having a hub with a small roller freely mounted thereon, and the opposite end of the longer arm beyond the handle portion thereof terminating in a flat blade shaped portion.

4,197,606

METHOD FOR HEAT-SETTING SYNTHETIC YARN

Harry F. Hale, Petersburg; Lewis R. Hackler, Hopewell, and Raymond J. Biron, Colonial Heights, all of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 789,177, Apr. 20, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,710
Int. Cl.[2] D06B *5/20*
U.S. Cl. 8—149.2 **7 Claims**

1. A method for heat setting synthetic yarn loosely hung in skeins on a carrier comprising

(a) placing said carrier in a conventional autoclave, then

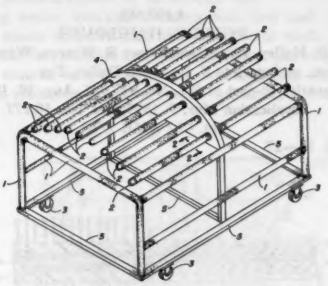
(b) reducing pressure on said yarn to a vacuum of from about 25 to about 29 inches of mercury, then

(c) introducing steam to said yarn to reach a temperature from about 212° F. to about 255° F. for a period of from about 3 to 7 minutes, then exhausting said steam, then

(d) introducing superheated steam to said yarn to reach a temperature of from about 230° F. to about 290° F. for a period of from about 3 to 7 minutes, then exhausting said steam, then

(e) repeating step (d), then again

(f) repeating step (d) for a period of from about 8 to 12 minutes, then



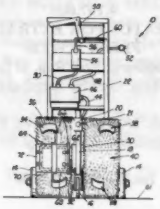
(g) holding said yarn under a vacuum of from about 22 to 28 inches of mercury for a period of from about 6 to 8 minutes, and removing said vacuum.

4,197,607

POWER DRIVEN SWEEPER

Donald W. Whitson, Scott City, Kans., assignor to All-Phase Electronics Inc., Scott City, Kans.

Filed Jan. 15, 1979, Ser. No. 3,310
Int. Cl.[2] A47L *11/19, 11/24*
U.S. Cl. 15—4 **5 Claims**



1. A power driven sweeper for cleaning a floor surface or the like, the sweeper comprising:

a frame;

a pair of rear wheels attached to the rear of the frame;

a sweeper handle attached to the rear of the frame;

switch means mounted on the sweeper handle;

a first circular brush mounted on a first horizontal drive shaft, the first drive shaft extending outwardly from one side of a drive gearbox attached to the frame;

a first circular cutting knife disposed adjacent the first circular brush and mounted on the first drive shaft, the first knife having a cutting blade extending outwardly at right angles from the end of the knife for receipt in the outer periphery of the first circular brush;

a second circular brush mounted on a second drive shaft extending outwardly from the opposite side of the gearbox;

a second circular cutting knife disposed adjacent the first circular brush and mounted on the second drive shaft, the second knife having a cutting blade extending outwardly at right angles from the end of the knife for receipt in the outer periphery of the second circular brush; and

drive means mounted on the frame and coupled to the gearbox for rotating the first and second brushes and the first and second cutting knives;

said switch means connected to the drive means for turning

the drive means on and off during the operation of the sweeper.

4,197,608

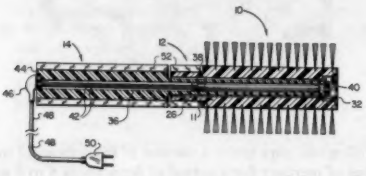
ROLLING HAIRBRUSH

Boyce B. Holley, Hurst, and James R. Warren, Watauga, both of Tex., assignors to S. E. Jones, Dallas, Tex.

Continuation-in-part of Ser. No. 937,941, Aug. 30, 1978. This application Mar. 9, 1979, Ser. No. 19,177

Int. Cl.[2] A46B 7/10

U.S. Cl. 15—27 **6 Claims**



1. A manually operated rolling hairbrush comprising: a generally cylindrical brush head having bristles extending radially from its surface over a first portion of its length and having a gripping surface over a second portion of its length,

a handle rotatably attached to said brush head adjacent the gripping portion of said brush head, and

heater means carried within said brush head.

4,197,609

SUCTION APPARATUS FOR EXTRACTING LIQUIDS FROM A WEB

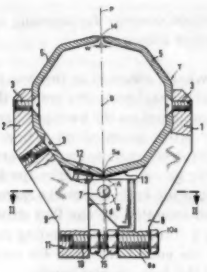
Heinrich Fuhring, Augsburg, Fed. Rep. of Germany, assignor to Bowe Maschinenfabrik GmbH, Augsburg, Fed. Rep. of Germany

Filed Feb. 15, 1978, Ser. No. 877,802

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1977, 2705496

Int. Cl.[2] B08B 5/04

U.S. Cl. 15—306 A **9 Claims**



1. A suction apparatus for extracting a liquid from a web, said apparatus comprising:

a pair of elongated shell halves concave toward one another and forming between them an evacuatable duct communicating with a slot defined between confronting longitudinal edges of said shell halves;

means connecting said shell halves together whereby displacement of one of said shell halves toward the other shell half reduces the width of said slot while displacement of said one of said shell halves away from said other shell half widens said slot;

respective members disposed externally of said duct and connected externally to each of said shell halves;

setting means between said members externally of said duct for displacing said members to establish the width of said slot; and

means for sealing at least one end of said duct to permit the generation of suction therein, each of said members being elongated and forming a lever, said members being pivotally connected together and having respective first arms on one side of their mutual pivot secured externally to the respective shell half and respective second arms extending to another side of said pivot and bridged by said setting means.

4,197,610

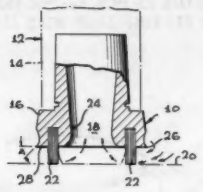
CLEANING DEVICES

Horst W. Schneider, West Covina, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Oct. 17, 1977, Ser. No. 842,417

Int. Cl.[2] A47L 9/04

U.S. Cl. 15—383 **6 Claims**



1. A cleaner comprising:

a brush;

means for rotating said brush so it brushes a surface to loosen dirt;

a curved shield having a plurality of holes thereon, and positioned so that said brush brushes against said shield after it lifts off the surface;

means for applying a vacuum to a side of said shield opposite said brush; and

electrical grounding means connected to said shield, said shield being constructed of electrically conductive material, whereby to discharge electrical charges on the brush that would cause dirt to cling to it.

4,197,611

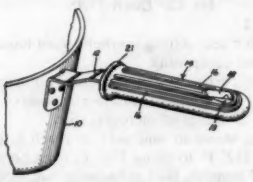
HAND GRIP FOR COOKING UTENSIL HANDLE

Gordon D. Bell; Ronald E. Bratton, both of Fort Wayne; Robert J. Kennedy, Jr.; Kendall S. Smith, II, both of West Lafayette, all of Ind., and Roger A. Kaye, Palo Alto, Calif., assignors to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.

Filed Sep. 14, 1978, Ser. No. 942,443

Int. Cl.[2] A47J 45/08

U.S. Cl. 16—116 R **11 Claims**



8. In combination with a cooking utensil handle, a hand grip comprising: an elongated body made of a resilient rubber-like material having low thermal conductivity, an elongated axial

chamber in said body extending from one end of said body to near the other end thereof but terminating short of said other end, said chamber being elongated in transverse cross-section along a direction orthogonal to the longitudinal axis of said body, said chamber having transversely opposite ends and an upper wall and a lower wall, a series of successive grooves in said upper wall and a series of successive grooves in said lower wall, said grooves serving to provide some degree of thermal insulation between the hand grip and cooking utensil handle in use, each of said series including first and last grooves in the respective series, said first and last grooves being spaced from the transversely opposite ends, respectively, of said chamber so as to form lands between the first and last grooves in each of said series and the respective transversely opposite ends of said chamber, said handle being disposed in said chamber.

4,197,612

CABINET HINGE

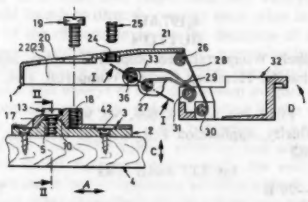
Ernst Zernig, Hemer, Fed. Rep. of Germany, assignor to Firma Richard Heinze GmbH & Co, KG, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,526

Claims priority, application Fed. Rep. of Germany, May 13, 1977, 7715244[U]

Int. Cl.[2] E05D *5/12*

U.S. Cl. 16—183 **7 Claims**



1. In the furniture hinge for the articulated connection of two furniture components, said higne having a first hinge part means operable for attachment to a first of said furniture components and a second hinge part means operable for attachment to the second of said furniture components, articulation means connecting said first and second hinge part means, said articulation means including a plurality of hinge lever means connected at their respective ends to said hinge part means by hinge pins and a spring element urging said first and second hinge part means toward one position, the improvement comprising a spring retaining pin, a bearing sleeve having inside diameter operable to receive said pin and an outside surface operable to receive one end of said spring element, a pair of parallel walls defined in the first of said hinge part means and operable to receive therein between said bearing sleeve, said walls having aligned boreholes operable to permit insertion of said pin into said bearing sleeve, and resting surface means disposed within the walls of said first hinge part means, said resting surface means being operable upon the urging of said spring element to position said sleeve so that its inside diameter overlaps but is slightly displaced from said wall boreholes, said bearing sleeve being displaced from said resting surface means into alignment with said wall boreholes with a concurrent tensioning of said spring element upon insertion of said pin into said bearing sleeve.

4,197,613

MEAT TENDERIZING DEVICE AND METHOD

Isaac C. Whiteley, P.O. Box 294, Redmond, Oreg. 97756

Filed May 4, 1978, Ser. No. 903,024

Int. Cl.[2] A22C *9/00*

U.S. Cl. 17—52 **15 Claims**

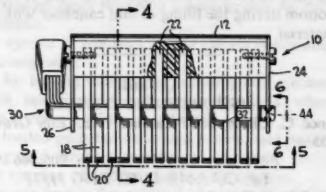
1. A meat tenderizing device comprising

first blade means including a plurality of first sharp tipped blades;

second blade means including a plurality of second sharp tipped blades;

support means mounting said first and second blade means in a first position relative to each other; and

spreading means movable between said first and second blade means to move said first and second blade means from said first position to a second position spaced further apart than in said first position whereby said first and second blade means can be forced into a piece of meat in



said first position to cut connective tissue of the meat during insertion and then can be spread within the meat by movement to said second position to tear connective tissue of the meat.

9. A method of tenderizing meat comprising the steps of forcing a plurality of sharp tipped blades into a piece of meat to cut connective tissue of the meat during insertion; and spreading the blades apart while the blades remain in the meat to tear connective tissue of the meat.

4,197,614

CANNISTER ROTATION MECHANISM

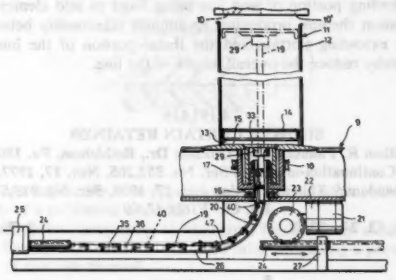
Kurt Kriechbaum; Herbert Walter, both of Ebersbach; Herbert Konig, Ebersbach-Sulpach, and Max Hartmannsgruber, Kirchheim, all of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Division of Ser. No. 805,214, Jun. 9, 1977, Pat. No. 4,133,079. This application Aug. 15, 1978, Ser. No. 933,948

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1976, 2626011

Int. Cl.[2] B65H *54/80*

U.S. Cl. 19—159 R **7 Claims**



1. A cannister rotation mechanism for the collection of textile material from a carding machine or the like comprising, in combination:

a frame;

a turntable rotatably mounted on said frame for supporting a cannister having a movable bottom, said cannister bottom being arranged to be vertically moved between an upper position and a lower position during the filling of said cannister with said textile material;

means for rotating said turntable;

a plurality of flexible metal bands arranged for reciprocating movement to move the upper portions of said bands in a

vertically extending path between a retracted position and an extended position in an angularly disposed relationship;

means for securing the upper ends of said bands in a fixed relationship for underlying engagement with said cannister bottom and means for releasably interlocking the adjacent side edges of said bands during the movement of the upper portions of said bands into said extended position to form a pillar and drive means for moving said bands reciprocally between said retracted position and said extended position to permit downward movement of said cannister bottom during the filling of said cannister with said textile material.

4,197,615

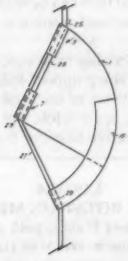
SHORTENING DEVICE

Lawrence C. Ullom, 2353 Lumber Ave., Elm Grove, W. Va. 26003

Filed May 12, 1978, Ser. No. 905,546

Int. Cl.[2] A44B *21/00*; F16G *11/12*

U.S. Cl. 24—68 F **5 Claims**



1. A device for shortening a normally linear length of flexible line, including a body portion, a portion of the length of said line being fixed to said body portion and extending therealong in a linear path, a portion of said line extending from one end of said length of line which is fixed to said body portion and being free thereof, an element extending from said body portion toward but spaced from said linear length of line, and extending portion of said line being fixed to said element in position thereon producing an angular relationship between the extending portion and the linear portion of the line to thereby reduce the overall length of the line.

4,197,616

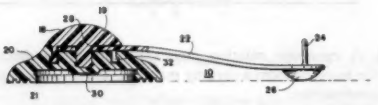
SHOWER CURTAIN RETAINER

William R. Panuski, 2500 Oakside Dr., Bethlehem, Pa. 18017

Continuation-in-part of Ser. No. 852,205, Nov. 17, 1977, abandoned. This application Jun. 27, 1978, Ser. No. 919,577

Int. Cl.[2] F16B *47/00*

U.S. Cl. 24—73 R **3 Claims**



1. A shower curtain retainer device adaptable for detachably fastening an end section of a shower curtain against a wall to which the device is mounted comprising

a base member adaptable for permanent fastening to a wall,

a flat spring member fastened at its proximal end section to the base member so as to extend radically from said base member, said spring member shaped so that its distal end section bears against, under spring bias, a surface of the wall to which the base member is attached, such that

an end section of a shower curtain may be detachably engaged between said distal end section of the spring member and the said wall surface, together with

a cap member, said cap member being formed with means to detachably fasten the proximal end section of the spring member to the base member, wherein

a pin is attached to the cap member and passes through a hole in the proximal end section of the spring member to engage a shaftway in the base member, wherein

the cap has a circular flange formed with a front aperature attached to a bottom portion of the cap member and detachably engageable with a circular groove in the base member.

4,197,617

BUTTON

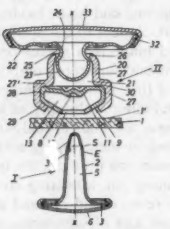
Horst G. Appelt, Wuppertal, Fed. Rep. of Germany, assignor to Firma Schaeffer-Homberg GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jun. 6, 1978, Ser. No. 913,190

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1977, 2725902

Int. Cl.[2] A44B *1/42*

U.S. Cl. 24—90 R **7 Claims**



1. A button or the like to be joined in one-point - fastening with two parts lying on both sides of the carrier material, comprising

a first button part and a second button part formed with cooperating means for connecting said button parts to one another,

one of said button parts is formed with a hollow shaft having a front end section and a rearward shaft section, said front end section being formed as a point,

the second button part being a hollow counter closure part having roll flank means, and

nominal breaking position means for detaching said front end section from said rearward shaft section when said hollow shaft is inserted in the second button part upon an impact on said point, forming a tubular open free end portion of said rearward shaft section constituting a hollow rivet as part of said cooperating means for connecting said button parts to one another, the breaking position means being a breakable weakened portion substantially encircling the shaft between the front end section and the rearward shaft section.

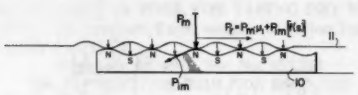
4,197,618
MAGNETIC CLOSURE DEVICE

Ludwig Bourguignon, Bernauerstrasse 75, 8210 Prien a. Ch., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 774,866, Mar. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 616,041, Sep. 23, 1975, abandoned. This application Jun. 26, 1978, Ser. No. 918,837

Int. Cl.[2] A44B *21/00*

U.S. Cl. 24—201 B 7 Claims



1. A magnetic closure device comprising permanent magnet means and armature means of magnetizable, magnetically soft material, said magnet means and said armature means having the same configuration, both of said means having contrary but interfitting transversely extending surfaces with ridges and valleys extending along the entire width of the permanent magnet means and of the magnetizable armature means, said ridges and valleys matching each other, each of the permanent magnet means and said armature means having a length corresponding to at least two ridges and two valleys extending across said length to directly contact each other in any closed position of the closure device in the direction of said length, said ridges of said permanent magnet means having one magnetic polarity along their entire width extending across said length, and said valleys of said permanent magnet means having an opposite magnetic polarity relative to the ridges, said opposite magnetic polarity also extending along the entire width of the respective valley, whereby said armature means form two direct magnetic return paths for said permanent magnet means in any cooperating position of both means relative to each other along each of said at least two ridges and said at least two valleys, said ridges and valleys having a friction increasing shape so that the magnetic closing force is increased by the resulting friction force and by the magnetic instability force, and wherein said cooperating ridges and valleys have such a shape that any pulling force tending to separate said magnet means and said armature means extends substantially perpendicularly to a surface which extends normal to said cooperating valleys and ridges, whereby an increased combined holding force is realized by any cooperating position of said first and second means relative to each other.

4,197,619
TONGUE AND BUCKLE FASTENER FOR A SAFETY BELT HARNESS

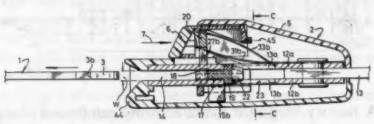
David W. Burleigh, Bognor Regis, England, assignor to Britax (Wingard) Limited, England

Filed Dec. 13, 1978, Ser. No. 969,049

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 7828214[U]

Int. Cl.[2] A44B *11/26*

U.S. Cl. 24—230 AL 5 Claims



4. A tongue and buckle fastener for a safety belt harness, said fastener comprising:

a tongue, said tongue having a head portion;

a buckle;

a latching member in said buckle, said latching member being in the form of a bridge having a pair of downwardly directed feet, the distance between said feet slightly exceeding the breadth of said head portion of said tongue, said bridge also having a pair of inwardly directed shoulders for securing said head portion of said tongue, the distance between said inwardly directed shoulders being less than the breadth of said head portion of said tongue, and said bridge having a pair of outwardly directed shoulders;

a pair of frame members in said buckle, said frame members being spaced apart to define a passageway for receiving said tongue;

a tongue ejector in said buckle, said ejector being slidable in said passageway;

a spring for biasing said ejector whereby said ejector slides beneath said inwardly directed shoulders when said tongue is removed from said buckle;

a spring loaded push-button in said buckle, said push-button moving said latching member to a release position to enable ejection of said tongue by said ejector;

means in said buckle for guiding said latching member, for movement between its latching and release positions, transversely of the direction of insertion of said tongue in said passageway;

a camming member in said buckle, said camming member having ramps, one at each side, to co-operate with said outwardly directed shoulders of said latching member;

means for guiding said camming member for movement in said direction of tongue insertion; and

a main spring member, said main spring member having a pair of spring arms which exert a return bias on said camming member and which respectively extend between said outwardly directed shoulders and said ramps, and said main spring member having at least one further arm which acts to bias said latching member into its latching position.

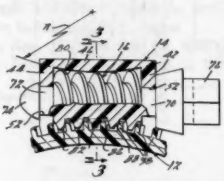
4,197,620
HOSE CLAMP

John M. Heuchert, 21704 Statler, St. Clair Shores, Mich. 48081

Filed May 10, 1978, Ser. No. 904,316

Int. Cl.[2] F16L *33/08*

U.S. Cl. 24—274 R 7 Claims



1. An adjustable hose-type clamping device fabricated entirely of a polymeric material,

said device comprising an elongated flexible strap element having a thread form provided integrally along a portion of one side thereof,

an enclosure member fixedly secured adjacent one end of said strap element and having longitudinally spaced end wall portions and a side wall portion extending between and interconnecting said end walls, each of said end walls including axially aligned openings therein,

a worm gear element disposed at least in part within said enclosure member, said worm gear element having a helical gear portion of double enveloping form such that the outer edges thereof lie along a longitudinally extending arcuate surface of revolution, the axis of revolution of said surface being coaxial with said worm gear element and journal portions provided adjacent axially opposite ends of said helical gear portion, said journal portions being disposed within said axially aligned openings in said

end walls whereby said end walls are operative to support said worm gear element, said helical gear portion engaging said thread form on said strap element,

said side wall portion extending partially circumferentially around a portion of said gear element and having an interior surface having a generally arcuate contour in an axial direction and positioned closely adjacent said outer edges along the full length thereof, said surface being operative to limit radial deflection of said gear element so as to thereby maintain said gear element in engagement with said thread form, said helical gear portion extending axially a distance substantially equal to the distance between said end walls, and

means defining a tool engaging portion at one end of said gear element, whereby said gear element may be selectively rotated to effect advancement of said strap relative to said enclosure member.

4,197,621

APPARATUS FOR FLATTENING THE BENT-UP EDGE OF A SHEET WORKPIECE

Franz Mair, Augsburg, Fed. Rep. of Germany, assignor to Erhard & Leimer KG, Augsburg, Fed. Rep. of Germany

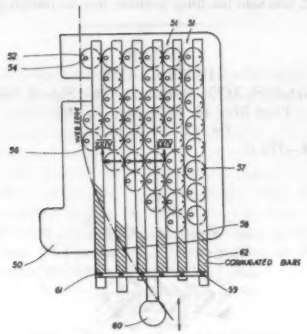
Continuation of Ser. No. 821,222, Aug. 2, 1977, Pat. No. 4,145,796, which is a continuation-in-part of Ser. No. 641,656, Dec. 17, 1975, Pat. No. 4,053,967. This application Aug. 17, 1979, Ser. No. 934,340

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1974, 2459682; Sep. 30, 1975, 2543568

The portion of the term of this patent subsequent to Oct. 18, 1994, has been disclaimed.

Int. Cl.[2] D06C *3/00*

U.S. Cl. 26—98 **3 Claims**



1. An apparatus for flattening a sheet workpiece having an edge bent over on one face of said workpiece toward the center thereof and being continuously displaced in a transport direction generally parallel to the bent-over edge, said apparatus comprising:

a flat support surface lying against the other face of said workpiece at said bent-over edge;

a guide surface juxtaposed with and generally parallel to said support surface and spaced therefrom to overlie said one face of said workpiece;

a two-dimensional array of orifices each formed in a respective nozzle in one of said surfaces, said orifices being inclined in a flow direction extending transversely to said transport direction outwardly from said center, said orifices directing respective jets of air against said workpiece for unfolding said bent-over edge;

means for supplying air under pressure to said array of nozzles; and

means connected with said nozzle for altering said flow direction.

4,197,622

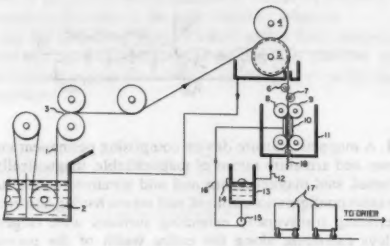
WET TOW CRIMPING PROCESS

Thomas D. Williamson, Lugoff, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 17, 1978, Ser. No. 934,614

Int. Cl.[2] D02G *1//12*

U.S. Cl. 28—267 **4 Claims**



1. A process for crimping an advancing tow of fibers which have been processed in at least one aqueous bath by the steps of uniformly compressing the tow in a confined space under a nip pressure of 600–1,000 lbs/in (107–178 kg/cm) to exude solvent-containing water from the tow, returning this exudate to the last aqueous bath, applying a predetermined amount of finish to the tow, crimping the fibers in a stuffing box crimper whereby some of the finish and a small amount of residual moisture are exuded from the tow, recovering the the moisture containing finish and removing it to a storage container, reapplying the recovered finish to the tow in the stuffing box at a rate corresponding to the rate of expression and collecting and drying the crimped tow.

4,197,623

FACTORY BARGE FOR MANUFACTURING REINFORCED ELONGATED CONCRETE PRODUCTS

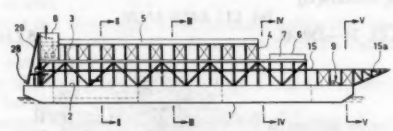
Toshimasa Suzuki; Chiaki Matsuyama, both of Hiroshima; Susumu Ogawa, Fukuyama; Yoshitaka Itoh, Ebina, and Yasuo Usui, Chigasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha; Daido Concrete Co., Ltd. and Shimizu Harbor Const. Corp., all of, Japan

Filed Apr. 4, 1978, Ser. No. 893,341

Claims priority, application Japan, Jul. 19, 1977, 52-86293

Int. Cl.[2] B28B *15/00, 23/02*

U.S. Cl. 29—33 D **7 Claims**



1. A factory barge for manufacturing reinforced elongated concrete products comprising: a first deck, a second deck above at least part of said first deck; batcher plant means mounted at one end of the barge for preparing ready-mixed concrete; reinforced concrete product unloader means mounted at the opposite end of the barge; and, between said batcher plant means and said unloader means, in the following order: concrete molds, concrete placer means on said first deck

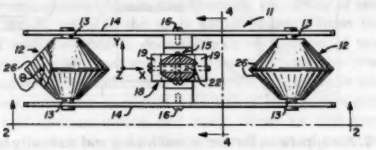
for placing the concrete received from said batcher plant into said molds; compactor means for compacting the concrete in said molds; curing means for curing the compacted concrete in said molds; and mold removing means for removing said molds from the cured concrete products; means for transferring said molds from said placer means to subsequent units; and reinforcement fabricating means mounted on said second deck to introduce fabricated reinforcement members into said molds.

4,197,624

CORNER ROLLER TOOL FOR TAPING DRY WALL

Harold M. Lass, San Jose, Calif., assignor to Corban Industries, Inc., San Jose, Calif.

Filed Oct. 20, 1978, Ser. No. 953,203
Int. Cl.[2] B05C *1/08*; B21B *7/02*; B44C *7/00*
U.S. Cl. 29—110.5 **5 Claims**



1. In a corner roller dry wall taping tool:

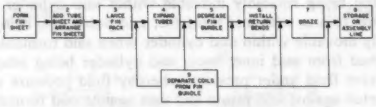
roller means for rolling dry wall tape into a corner seam, said roller means including a pair of corner roller wheels disposed for rotation about a pair of axes of rotation which are spaced apart such that one of said wheels tracks behind the other as said wheels roll along the corner seam being taped, each of said wheels having a tread portion of generally V-shaped radial cross-section with opposed faces and with the included angle between the opposed faces of said tread portions being between 80° and 110° for pressing the tape into firm engagement with the side walls at the corner seam.

4,197,625

PLATE FIN COIL ASSEMBLY

John Jahoda, McMinnville, Tenn., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 15, 1978, Ser. No. 878,059
Int. Cl.[2] B23P *15/26*
U.S. Cl. 29—157.3 V **6 Claims**



1. A method of assembling a plate fin coil which comprises the steps of:

forming sheets of single pass plate fins from plate fin stock, said plate fins having openings for the receipt of tubular members and the individual plate fins of said sheet being secured by tabular portions of plate fin stock to the adjacent fins, said tabular portions being sized to rupture upon the application of a force such that the fins connected by the tabular portions may be separated;

arranging a plurality of sheets of single pass plate fins such that the openings therein are in registration;

lacing the sheets of plate fin by inserting tubes through the plate fin openings such that the sheets of fins are spaced along the tubes; and

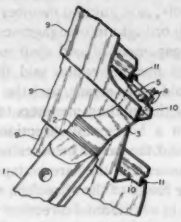
separating the now partially assembled coil cores by rupturing at least some of the tabular portions connecting adjacent fins resulting in a plurality of partially assembled coils having the appropriate fin arrangement.

4,197,626

TOOL FOR INTERLOCKING SIDING

Richard F. Golovich, Box 5 Heckert Rd., Bakerstown, Pa. 15007

Filed Oct. 2, 1978, Ser. No. 947,346
Int. Cl.[2] B25B *27/00*
U.S. Cl. 29—270 **1 Claim**



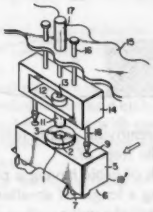
1. A tool for progressively bringing together and interlocking the longitudinal flanges of adjoining siding elements of a building, said tool comprising a strip of metal having, at one end, an elongated handle portion adjoining a portion extending at an obtuse angle thereto which, in turn, adjoins a lower portion which is parallel to said handle portion and a portion which is reversely bent with contacting parts welded and which adjoins an upstanding portion from said lower portion of right triangular outline transversely of said strip, said upstanding portion having an apex portion of said triangular portion extending beyond the side edge of said lower portion, said triangular portion being flanged at the top throughout one entire side, whereby said reversely bent portion will progressively slide against the side of the flange of a longitudinal channel of the adjoining siding element until interlocking relationships is achieved between said longitudinal flange and channel, and a pair of grips fastened on both sides of said handle portion.

4,197,627

INTERFITTING APPARATUS

Hisaaki Hirabayashi, and Koichi Sugimoto, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 21, 1978, Ser. No. 934,718
Claims priority, application Japan, Feb. 6, 1978, 53-11465
Int. Cl.[2] B25B *27/14*
U.S. Cl. 29—281.5 **7 Claims**



1. Interfitting apparatus comprising:

fitting jig means formed with a regulating opening for receiving therein one of a shaft member having a chamfered forward end and a holed member formed with a hole chamfered at its entrance, said fitting jig means holding said one member in said regulating opening in such a manner that the posture of said one member is regulated in a manner to move freely within tight tolerances and the axis thereof is substantially vertically oriented;

table means mounting thereon the other member by posi-

tioning the same with a high degree of precision and supported for slight movement in a horizontal direction;

means for vertically moving said fitting jig means to cause said hole formed in said holed member and said shaft member to move toward each other; and

guide means comprising guiding members and guided members mounted at said fitting jig means and said table means respectively, said guiding members and said guided members being brought into engagement with each other prior to the engagement of said shaft member with the hole in said holed member when said fitting jig means moves toward said table means, and the guided members being guided by the guiding members to move the table means slightly in a horizontal direction to position the shaft member and the holed member relative to each other in such a manner that they are juxtaposed against each other within the range of the chamfers, so that said table means can move in a horizontal direction within a predetermined relief range when the chamfers of the shaft member and the hole begin to come into engagement with each other;

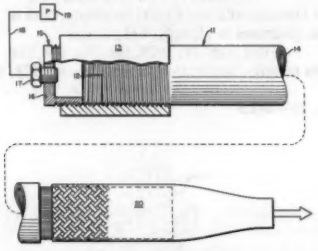
said fitting jig means being further moved vertically so that said one member may fit in said the other member by utilizing the chamfer-to-chamfer engagement whereby interfitting of the shaft member and the hole in the holed member can be effected by means of a fitting force exerted on the shaft member from outside a jamming area.

4,197,628

METHOD FOR REMOVING CONDUCTORS FROM THE SHEATHING OF A CABLE

Allen C. Conti, 5294 E. 117th St., Garfield Heights, Ohio 44125, and Armand R. Conti, 3464 N. Wendover Cir., Youngstown, Ohio 44511

Filed Nov. 30, 1978, Ser. No. 965,127
Int. Cl.[2] F16L *1/00*; H02G *1/12*
U.S. Cl. 29—426.5 **10 Claims**



1. A method for removing conductors from the sheathing of cable comprising the steps of:

selecting a length of cable having a plurality of conductors extending along a length of sheathing,

attaching a sleeve to the outer surface of the sheathing at one end thereof,

using the sleeve to introduce a lubricant into the sheathing under sufficient pressure to cause the lubricant to flow from one end of the cable toward an opposite end thereof along the conductors within the sheathing,

establishing an effective amount of lubricant between the sheathing and the conductors by dispersion of the lubricant from the conductors, and

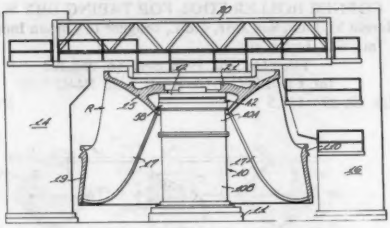
withdrawing the plurality of conductors in the presence of said effective amount of lubricant from the sheathing by applying a force to one end of the conductors.

4,197,629

APPARATUS FOR MACHINING AND STATICALLY BALANCING A LARGE AND HEAVY WORKPIECE

Jack L. Reese, Spring Grove; Robert G. Grubb, and Selim A. Chacour, both of York, all of Pa., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 20, 1977, Ser. No. 843,796
Int. Cl.[2] B23B *3/10*; B23P *23/00*; G01M *1/168*
U.S. Cl. 29—560 **11 Claims**



1. An apparatus for use in machining and statically balancing a large and heavy workpiece, said apparatus comprising a vertical support means, a turntable mounted for rotation on the upper end of said vertical support means, said turntable being adapted to support said workpiece and to rotatably move said workpiece past a machining tool which is stationarily mounted contiguous the path of rotary movement of said workpiece whereby to machine said workpiece, a composite member of annular shape positioned in underlying relation to said turntable, said composite member comprising a bearing having an inner race and an outer race and bearing elements interposed between said inner race and said outer race, said outer race being secured to said vertical support means, said inner race being detachably secured to said turntable, an internal ring gear carried by a radially inner portion of said inner race, a motor means carried by said vertical support means and positioned beneath said turnable, a pinion gear rotatably driven by said motor means, said pinion gear being in geared engagement with said internal ring gear whereby to rotatably drive said turntable when said turntable is secured to said inner race, a power operated linear actuator comprising a cylinder carried by said vertical support means and a piston positioned within said cylinder, said piston being secured to said turntable whereby said piston and said turntable move in unison, said piston being rotatably movable within said cylinder as said piston rotates with said turntable, said piston also being vertically movable within said cylinder when said turntable is detached from said inner race, said cylinder being adapted to receive fluid under pressure whereby fluid pressure may be exerted against said piston and thus against said turntable and while said turntable is still connected to said inner race and is rotating during the machining operation on said workpiece, whereby to exert upward force on said piston and on said turntable and thus relieve thrust load on said bearing, said piston being movable upwardly in said cylinder by fluid pressure when said turntable is detached from said inner race subsequent to the completion of the machining operation on said workpiece, whereby to elevate said turntable above and clear of said inner race and in position for the static balancing of the workpiece mounted on said turntable, said piston including a surface portion bearing against the cylinder wall and shaped to permit tilting movement of said piston in said cylinder during the balancing of said workpiece due to unbalanced weight distribution in said workpiece whereby to permit tilting of said turntable and of the workpiece mounted on said turntable.

10. An apparatus for use in machining a large and heavy workpiece, said apparatus comprising a vertical support means, a turntable mounted for rotation on the upper end of

said vertical support means, said turntable being adapted to support said workpiece and to rotatably move said workpiece past a machining tool which is stationarily mounted contiguous the path of rotary movement of said workpiece whereby to machine said workpiece, a composite member of annular shape positioned in underlying relation to said turntable, said composite member comprising a bearing having an inner race and an outer race and bearing elements interposed between said inner race and said outer race, said outer race being secured to said vertical support means, said inner race being detachably secured to said turntable, an internal ring gear carried by a radially inner portion of said inner race, a motor means carried by said vertical support means and positioned beneath said turntable, a pinion gear rotatably driven by said motor means, said pinion gear being in geared engagement with said internal ring gear whereby to rotatably drive said turntable when said turntable is secured to said inner race, said turntable being provided with aperture means therethrough, the center of said aperture means lying at the same radial distance from the center of said turntable as does the axis of rotation of said pinion gear, whereby said aperture means is movable by rotation of said turntable into concentric overlying relation to said pinion gear, whereby to permit removal of said pinion gear through said aperture means, and cover means for said aperture means, said cover means being movable out of covering relation to said aperture means to permit removal of said pinion gear, a power operated linear actuator comprising a cylinder carried by said vertical support means and a portion positioned within said cylinder, said piston being secured to said turntable whereby said piston and said turntable move in unison, said piston being rotatably movable within said cylinder as said piston rotates with said turntable, said piston also being vertically movable within said cylinder when said turntable is detached from said inner race, said cylinder being adapted to receive fluid under pressure whereby fluid pressure may be exerted against said piston and thus against said turntable and while said turntable is still connected to said inner race and is rotating during the machining operation on said workpiece, whereby to exert upward force on said piston and on said turntable and thus relieve thrust load on said bearing.

4,197,630

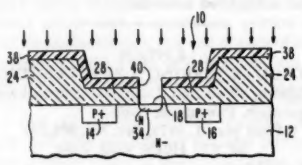
METHOD OF FABRICATING MNOS TRANSISTORS HAVING IMPLANTED CHANNELS

Theodore Kamprath, Flanders, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,778

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—571 **10 Claims**



1. A method of making a MNOS transistor comprising the steps of:

(a) selecting a body of semiconductor material of a first conductivity type;

(b) forming a source and a drain spaced therefrom of opposite conductivity type in said body extending to a surface of said body;

(c) forming an oxide layer over the surface of said body at least between said source and said drain;

(d) applying a masking layer over the surface of said oxide;

(e) forming an opening which extends through said masking layer and through said oxide layer between said source and said drain and exposes a portion of said surface;

(f) implanting ions of said first conductivity type through said opening in said masking layer and said oxide layer into end body whereby a region of the same conductivity type but having a greater conductivity will be formed in said body within said opening; then

(g) widening the portion of said opening which extends through said oxide such that said widened opening in said oxide is wider than said opening in said masking layer, whereby the edges of said widening opening in said oxide will be laterally displaced beneath the edges of said opening in said masking layer and said implanted region will be entirely within said widened oxide opening;

(h) removing said masking layer;

(i) forming a thin oxide over the exposed portion of said surface;

(j) applying a silicon nitride layer over said oxide layer at least between said source and said drain;

(k) forming a conductive gate over said silicon nitride layer at least between said source and said drain; and

(l) providing electrical contacts to said source and said drain.

4,197,631

METHOD OF MANUFACTURING SEMICONDUCTOR COMPONENTS

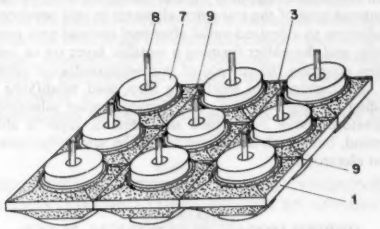
Eckhard Meyer, Lampertheim, and Gunter Berndes, Heppenheim, both of Fed. Rep. of Germany, assignors to BBC Brown Boveri & Company, Limited, Baden, Switzerland

Filed Dec. 6, 1977, Ser. No. 857,860

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 2656015

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—574 **8 Claims**



1. A method of fabricating semiconductor high reverse voltage thyristors having electrodes and terminals, comprising the steps of:

preparing an undivided semiconductor wafer having opposed sides and at least one pn-junction formed between said opposed sides,

etching matching grid patterns of grooves into the opposed sides of said undivided wafer, said etching forming on said opposed sides matching mesas with concave side surfaces and opposed elevations with upper surfaces bounded by closed rounded curves,

coating the exposed lateral surfaces of said mesas with a passivating layer,

metallizing said upper surfaces of the said elevations, thereby providing ohmic contacts for said undivided semiconductor wafer,

tinning with solder at least one side of a plurality of disks composed of electrically and thermally conducting material,

locating the tinned disks with the tinned side thereof in contact wtih selected of the metallized upper surfaces of said elevations on the opposed sides of said undivided wafer,

soldering simultaneously each of said disks to said selected elevations on opposed sides of said undivided wafer, and

breaking said undivided semiconductor wafer into individual semiconductor chips along the lines of said etched grooves.

4,197,632

SEMICONDUCTOR DEVICE

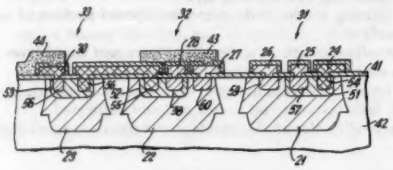
Kunio Aomura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 746,744, Dec. 2, 1976, abandoned. This application Sep. 20, 1978, Ser. No. 943,913

Claims priority, application Japan, Dec. 5, 1975, 50-145473

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—574 **2 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of forming a plurality of transistor elements and a monitoring transistor element in a semiconductor substrate, said monitoring transistor having substantially the same structure and size of a transistor element to be monitored, forming polycrystalline silicon electrodes connected to the base, emitter, and collector regions of said monitoring transistor element and extending on an insulating film covering the surface of said semiconductor substrate, measuring the current gain of the monitoring transistor by the use of portions of said silicon electrodes extending on said insulating film, modifying the current gain of the transistor elements in said semiconductor substrate to a desired value after said current-gain measuring step, and thereafter forming a metallic layer on an insulating film covering the surface of said semiconductor substrate after said current-gain modifying step, said modifying step including the step of heating said semiconductor substrate at a temperature above that which said metallic layer is able to withstand, but which can be withstood by said polycrystalline silicon electrode.

4,197,633

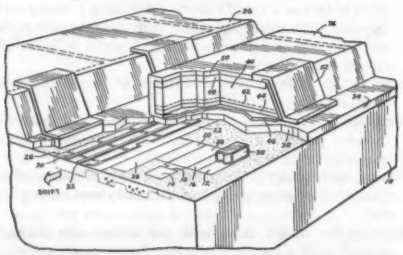
HYBRID MOSAIC IR/CCD FOCAL PLANE

Robert V. Lorenze, Jr., Westford, and William J. White, Chelmsford, both of Mass., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Sep. 1, 1977, Ser. No. 829,745

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—577 R **29 Claims**



1. A method of forming a detector array on a substrate, the method comprising:

forming on the substrate an insulator layer with a plurality of rows containing individual contact pads each exposed at a surface of the insulator layer;

forming a surface electrical contact on a portion of a body of detector material;

bonding the surface electrical contact on the body of detector material to the insulator layer surface;

removing portions of the body to form rows of detector material positioned adjacent to those portions of the insulator layer surface located between the rows of contact pads where exposed;

forming a plurality of individual detectors in each row of detector material;

interconnecting at least one of the plurality of individual detectors with a contact pad in an adjacent row of contact pads.

4,197,634

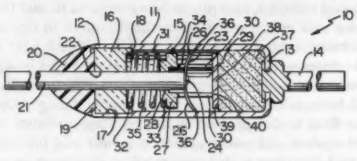
METHOD OF MAKING A THERMALLY ACTUATABLE ELECTRICAL SWITCH CONSTRUCTION

Emil R. Plasko, Washington Township, Fayette County, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 716,579, Aug. 23, 1976, Pat. No. 4,109,229. This application May 10, 1978, Ser. No. 904,566

Int. Cl.[2] H01H *37/76*

U.S. Cl. 29—622 **11 Claims**



1. In a method of making a thermally actuatable electrical switch construction having a deformable contact member normally disposed in electrical contact with a stationary contact member while a temperature sensitive member of said construction is in a solid condition and being deformed out of contact with said stationary contact member by deformable means of said construction when said temperature sensitive member is rendered non-solid by sensing a temperature above a predetermined temperature, the improvement comprising the step of disposing said deformable contact member so as to be deformed in a direction toward said temperature sensitive member by said deformable means when said temperature sensitive member is rendered non-solid.

4,197,635

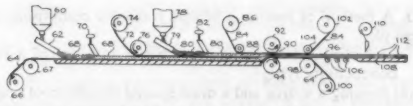
METHOD OF MAKING A ZINC ELECTRODE

John M. Bilhorn, Stonington, Conn., assignor to Yardney Electric Corporation, Pawcatuck, Conn.

Filed May 1, 1978, Ser. No. 901,547

Int. Cl.[2] H01M *4/42, 4/66*

U.S. Cl. 29—623.5 **2 Claims**



1. An improved method of making a zinc electrode for an electrochemical cell, which method comprises:

a. mixing zinc particles selected from the group consisting of zinc metal, zinc oxide and mixtures thereof with a concen-

tration of bonding agent sufficient to form said particles into a continuous film but insufficient to totally eccapsulate the particles;

b. treating the resultant mixture of zinc particles and bonding agent to form a dry and freely flowable doctorable powder;

c. doctoring said dry powder to a desired thickness on a conveyor;

d. disposing a current collector on said doctored powder, disposing a second layer of said powder on the free side of said current collector and doctoring said second layer of powder;

e. passing said two doctored layers of powder with said current collector therebetween into a pressure nip between pressure rollers at ambient temperature to form two continuous liquid-porous films from said powder and to combine said films with said current collector; and,

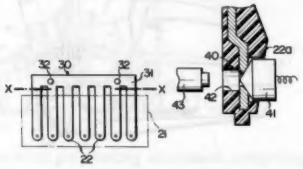
f. dividing said composite into zinc electrodes of desired size.

4,197,636

METHOD OF PRODUCING A STRUCTURE OF CONNECTION TERMINALS

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 25, 1977, Ser. No. 800,546
Claims priority, application Japan, Jun. 1, 1976, 51/63926
Int. Cl.[2] H01R *9/04*
U.S. Cl. 29—882 **6 Claims**



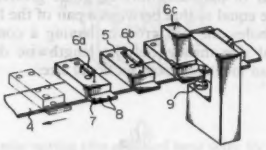
1. A method of producing a structure of connection terminals having a plurality of contacts to which counterpart contacts are pressed to make electrical connection, comprising the steps of preparing an intermediate material having a plurality of contact pieces and a connection portion integrally formed with the contact pieces, one end of each of the contact pieces providing a contact and having a hole and the other being joined to the connection portion, supporting the intermediate material by inserting a pin in the hole of the contact piece, one end of said pin having a smaller diameter portion for insertion into said hole and a larger diameter portion forming a face which contacts a face of said contact piece, forming an insulation substrate having two through holes which are coaxial with and of larger diameter than the hole in said contact piece, each of said through holes being disposed on an opposite face of said contact piece, by molding an electrically insulating synthetic resin with the intermediate material buried therein such that the other ends of the contact pieces are left unburied, and removing the pin from the hole and cutting off the connection portion of the intermediate material from the contact pieces, whereby to provide a plurality of exposed outer contact pieces and a plurality of resilient exposed inner contact pieces, positioned about said contact piece holes on opposite faces of said contact pieces, which are separated by said insulating resin.

4,197,637

AUTOMATED ASSEMBLY APPARATUS FOR PRINTED CIRCUIT BOARDS

Yasuhiro Honda, Tanashi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1978, Ser. No. 897,468
Claims priority, application Japan, Apr. 22, 1977, 52/46454
Int. Cl.[2] H05K *3/32, 13/02*
U.S. Cl. 29—741 **11 Claims**



1. An automated assembly apparatus for assembling printed circuit boards and electrical components, comprising:

parts conveyance means including jig conveyance means for conveying each of said plurality of electrical components to a relay station and a plurality of parts conveyance jigs secured thereto;

parts supply means including parts feeders for supplying prescribed electrical components to said parts conveyance jigs, respectively, according to a predetermined assembly sequence; and

parts insertion means including a plurality of chucks for grasping said each of said electrical components, that have been delivered to said relay station by said parts conveyance means, and inserting said electrical components into the printed circuit boards in a successive manner;

each of the parts conveyance jigs including an identification code for identifying the electrical components being supplied, detection means for detecting said identification code, a prescribed parts supply device being operated responsive to the detection means, whereby electrical components are supplied to said parts conveyance jigs.

4,197,638

METHOD OF INSERTING ELECTRONIC COMPONENTS TO A PRINTED CIRCUIT BOARD AND AN APPARATUS THEREFOR

Koichi Asai, Nagoya, and Tousuke Kawada, Chiryu, both of Japan, assignors to Fugi Mfg. Co., Ltd., Aichi, Japan

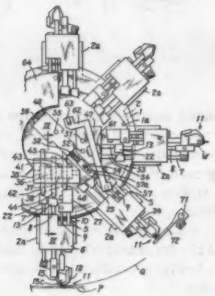
Filed Jun. 2, 1978, Ser. No. 912,392
Claims priority, application Japan, Aug. 27, 1977, 52/102880; Sep. 10, 1977, 52/108982
Int. Cl.[2] B23P *19/04*
U.S. Cl. 29—741 **8 Claims**

1. A chucking mechanism used in a machine for inserting a pair of lead wires extending from a head of an electronic component into lead wire receiving holes in a printed circuit board, the chucking mechanism comprising a pair of pawls capable of opening and closing in a direction which is normal to a plane in which a pair of lead wires are to be and capable of chucking the pair of lead wires with chucking surfaces formed in confrontation on each tip of the pawls of said pair of pawls, while loosely accommodating without chucking a head of the component between said pawls, at least one of said chucking surfaces being provided with at least a pair of parallelly formed guide grooves spaced at a distance equal to that between a pair of the lead wire receiving holes, all said grooves having a constant cross sectional size throughout the lengthwise direction thereof and having an identical cross sectional size and shape.

7. A machine for inserting lead wires extending from a head of an electronic component into lead wire receiving holes in a printed circuit board the machine comprising:

an index table intermittently rotatable in one direction;

a plurality of chucking mechanisms, each of which includes a fixed pawl and a movable pawl coacting for chucking the lead wires from a direction perpendicular to a plane in which the lead wires are to be with chucking surfaces of said pawls formed in confrontation on each tip of said pawls, while loosely accommodating without chucking the head of the component between said pawls, at least one of said chucking surfaces being provided with at least a pair of parallelly formed guide grooves spaced a distance equal to that between a pair of the lead wire receiving holes, all said grooves having a constant cross sectional size throughout the lengthwise direction thereof and an identical cross sectional size;



a plurality of chuck supporting means equal in number to said chucking mechanisms disposed circumferentially, around said index table at an equal circumferential angular distance, for retaining said chucking mechanisms such that in operation said fixed pawl is positioned front in relation to the rotational direction of said index table and said chucking mechanisms can be moved back and forth in a substantially radial direction of said index table; and

an operating mechanism, being in interlocked relation with rotation of said index table, for reciprocating, via said chuck supporting means, and opening and closing as well, said plurality of chucking mechanisms, at respectively preset times.

4,197,639

GLASS CUTTER

Ulrich Bohle, Solingen, Fed. Rep. of Germany, assignor to Josef Bohle, Solingen, Fed. Rep. of Germany

Filed Dec. 1, 1978, Ser. No. 965,675

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753527

Int. Cl.[2] **C03B** *33/10*

U.S. Cl. 30—164.95 **2 Claims**

1. A glass cutter including a head at one end, a manipulator at the opposite end, a casing arranged at the head and defined by a support plate and a circular cover plate firmly connected thereto, a plurality of cutting discs supported circularly and rotatably between the support plate and the circular cover plate, of which cutting discs always one is in readiness for cutting, the casing of the cutting discs being retained exchangeable in an elongated recess at the head of the glass cutter and the support plate being formed multi-edged at the perimeter, wherein the support plate (8) of the cutting discs (7) engages with two flattened faces parallel to one another at lateral confinements of the recess (3) which defines an arc at its inner end at the head of the glass cutter; two opposing grooves (5) parallel to the lateral confinements of the recess (3) are associated with the recess in advance thereof for accommodating the portions of the stand-by cutting discs projecting relative to the casing of the cutting discs (7); the cover plate (9) of the casing is guided fitting into a free space confined by the outer limb of the groove (5), and the casing of the cutting discs passes through an edge cutout (4) of the head (1) of the glass cutter with a screw (10), a knurled nut (13) being guided on the screw and capable of being tightened against the head (1) of the glass cutter.

4,197,640

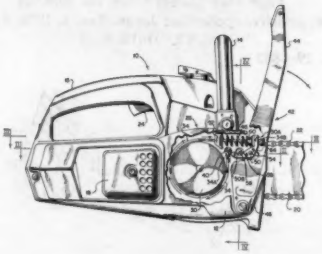
SAFETY BRAKING APPARATUS FOR PORTABLE CHAIN SAW

Billy W. Murray, Shreveport, La., assignor to Beaird-Poulan Division, Emerson Electric Co., Shreveport, La.

Filed Sep. 18, 1978, Ser. No. 942,987

Int. Cl.[2] **B27B** *17/00*

U.S. Cl. 30—382 **14 Claims**



1. In a chain saw of the type including a housing, a guide bar projecting from said housing, a cutting chain mounted to run on said guide bar, and motive means carried by said housing coupled to said cutting chain for propelling said cutting chain around said guide bar, the improvement comprising, in combination:

a safety lever pivotally mounted on said housing for movement from an operating position to a braking position;

a brake band having a first end portion coupled to said safety lever, a second end portion coupled to said housing, and an intermediate portion disposed for frictional engagement with said motive means in response to movement of said safety lever from said operating position to said braking position;

a latching member pivotally mounted on said safety lever for rotational movement relative to said force transmitting safety lever, said latching member having a first end portion disposed for releasable engagement with said safety lever and a second end portion disposed in releasably latching engagement with said housing; and,

a spring member engaged intermediate said housing and said latching member, said spring member exerting a yieldable force on said safety lever which constantly biases said safety lever for movement from said operating position to said braking position, said spring member also exerting a yieldable latching force on said latching member and cooperating with said safety lever for holding said second

end portion of said latching member in releasably latching engagement with said housing for resisting movement of said safety lever and thereby preventing inadvertent frictional engagement of said brake band with said motive means when said safety lever is in said operating position, and said spring member cooperating with said safety lever for permitting rotation and disengagement of said latching member from said housing as said safety lever rotates from said operating position to said braking position in response to an external actuating force acting on said safety lever.

4,197,641

ELECTRICAL PULP TESTING INSTRUMENT

Monika Paulke, Neunkirchen a.Brand; Eugen Hohmann, Heppenheim, and Bernd Nickel, Bensheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 20, 1978, Ser. No. 890,635

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714192

Int. Cl.[2] **A61C** *19/04*

U.S. Cl. 433—32 **4 Claims**

1. An electrical pulp testing instrument comprising a handpiece having means accommodating a charge storage device as source of supply, and electrode means, and an electrical circuit means operable to generate a stimulating current variable as to its strength, said electrical circuit means being connected to said electrode means for supply of said stimulating current thereto, said electrical circuit means having circuit means (**10, 14, 17**) which automatically step up the stimulating current during a predetermined period of time from zero to a maximum value linearly and disconnect the current at the expiration of said period, characterized by said step up circuit means comprising an electronic constant current source (**10**), said electrical circuit means comprising a chopper (**7**) connected with the accommodating means, a transformer (**8**) connected with the output of the chopper, and rectifier means connected with the output of said transformer and having its output connected with said constant current source (**10**) for energizing said constant current source (**10**), an astable multivibrator (**12**) connected with said constant current source (**10**) for switching the current output thereof at a constant frequency (f_2), a frequency divider (**13**) connected to the multivibrator (**12**), said step up circuit means further comprising a binary coded decimal counter (**14**) connected to the output of the frequency divider (**13**), and a digital-analog converter means (**17**) connected with the counter for actuation thereby to produce a progressively changing output and connected to the constant current power source (**10**) for sequencing the step up of the stimulating current.

4,197,642

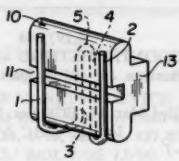
BENT WIRE ORTHODONTIC SPRING CLIP

Melvin Wallshein, 8645 Bay Pkwy., Brooklyn, N.Y. 11214

Filed Sep. 29, 1977, Ser. No. 837,725

Int. Cl.[2] **A61C** *7/00*

U.S. Cl. 433—11 **114 Claims**



1. An orthodontic spring clip made of bent wire for use with an orthodontic bracket means having an elongated arch wire receiving opening formed in a front surface portion thereof, the wire spring clip comprising:

a first resilient wire portion comprising at least two spaced apart elongated members for engaging and passing over at least a part of said front surface portion of the bracket having said arch wire receiving opening therein, and for passing over at least a portion of said arch wire receiving opening to retain an arch wire relative to said bracket, said at least two elongated members being spaced apart a distance so as to pass over a part of said front surface portion of the bracket and over at least a portion of said arch wire receiving opening intermediate the ends of said elongated arch wire receiving opening;

a second wire portion comprised of at least two elongated members coupled to said first wire portion of said clip for engaging a portion of said bracket remote from said front surface of said bracket when said first wire portion of said clip at least partially covers said arch wire receiving opening of the bracket, said elongated members of said second wire portion of said clip crossing each other; and

means coupling together the elongated members of at least one of said first and second clip portions.

4,197,643

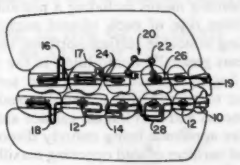
ORTHODONTIC APPLIANCE OF TITANIUM ALLOY

Charles J. Burstone, Farmington, and A. Jon Goldberg, West Hartford, both of Conn., assignors to University of Connecticut, Farmington, Conn.

Filed Mar. 14, 1978, Ser. No. 886,430

Int. Cl.[2] **H01L** *7/58;* **A61C** *7/00;* **C22C** *14/00*

U.S. Cl. 433—20 **11 Claims**



1. In an orthodontic appliance having a force-imparting wire for applying corrective forces to a tooth, said wire having a cross section in the range of about 0.1 mm. to 2.0 mm., the improvement wherein said force-imparting wire is formed from a room temperature stabilized beta-titanium alloy having a modulus of elasticity well below 20×10^6 psi, said wire having a preselected ratio of yield strength to modulus of elasticity ranging from a level comparable to that of stress relieved 18-8 stainless steel wire of the same cross section up to at least 80% greater than that of such stainless steel wire, whereby said wire is capable of applying a lower and more constant force magni-

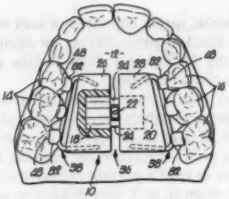
tude with greater accuracy over a longer period thereby enhancing the effective working period of the appliance, said beta-titanium alloy wire having a higher maximum elastic deflection to yield than said stainless steel wire and an ability to withstand extensive bending into complex orthodontic configurations.

4,197,644

ORTHODONTIC METHOD AND APPLIANCE

Richard J. Ackerman, Jr., 605 W. Dartmouth Rd., Kansas City, Mo. 64113

Filed Mar. 16, 1978, Ser. No. 887,119
Int. Cl.[2] A61C *7/00*
U.S. Cl. 433—7 **13 Claims**



7. An orthodontic appliance for spreading the midpalatal suture of a patient and adapted to be attached to the patient's maxillary teeth without the need for orthodontic bands, including:

a main body comprising first and second body portions;

structure shiftably coupling said body portions, including manually operable force transmitting mechanism for urging said body portions to shift away from each other;

a pair of generally U-shaped rigid anchoring elements respectively mounted on said body portions and extending beyond the latter,

each of said anchoring elements comprising a generally straight base side and a pair of legs extending away from said base side,

said base sides of said anchoring elements including portions adapted to extend in a direction along, and adjacent to, lingual surface areas of respectively associated selected sets of opposing maxillary teeth when said appliance is installed in the patient's palatal cavity; and

means carried by each of said anchoring elements adjacent said base side portions thereof for mounting said anchoring elements only on said lingual surface areas of said teeth,

said mounting means including a plurality of pad means on said base side of each of said anchoring elements and defining bondable surface portions, said bondable surface portions generally conforming to the respectively associated lingual surface areas of said teeth and adapted to adhere to an adhesive material introduced between said pad means and said lingual surface areas of said teeth,

the entire appliance being entirely disposable between said lingual surfaces of said opposing maxillary teeth in said set of the latter.

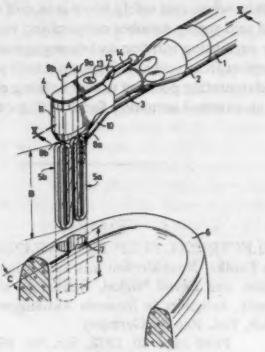
4,197,645

DRILL HEAD AND BONE DRILL

Hans M. F. Scheicher, Rondell Neuwittelsbach 4, D 8000 Munich, 19, Fed. Rep. of Germany

Filed Jun. 29, 1977, Ser. No. 811,224
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1976, 2630400; Jul. 6, 1976, 2630408; Sep. 4, 1976, 2639887
Int. Cl.[2] A61C *1/12*
U.S. Cl. 433—128 **12 Claims**

1. A drilling apparatus for the preparation of bone cavities comprising a drill head having drive means therein, at least two drills each having a shank and gear means operatively connecting said shanks to said drive means for simultaneously rotating said drills in opposite directions, each of said drills



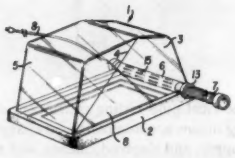
having cutting surfaces defining an area of rotation which overlaps the area of rotation of at least one other drill to provide intersecting bone cavities.

4,197,646

HOUSING FOR DENTAL AMALGAMATOR

Paul M. Morrison, 9004 Copenhaver Dr., Potomac, Md. 20854

Filed Dec. 5, 1977, Ser. No. 857,555
Int. Cl.[2] A61C *19/02*
U.S. Cl. 433—97 **10 Claims**



1. A housing for a dental amalgamator comprising:

(a) a base tray member of flexible material and having a central portion surrounded by a perimeter portion, said central portion being horizontally disposed and recessed with respect to said perimeter portion for supporting said dental amalgamator and for retaining any liquid mercury lost from said amalgamator;

(b) a canopy supported about its perimeter by said perimeter portion of said tray member and adapted to cover said dental amalgamator, said canopy including an opening therein for access to said dental amalgamator;

(c) a removable closure covering and sealing said opening in said canopy;

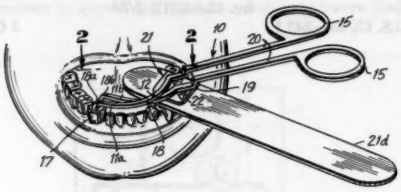
(d) means for releasably securing and sealing together the perimeter of said canopy and said perimeter portion of said tray member, said securing and sealing means comprising a groove in said perimeter portion of said tray member for receiving therein the perimeter edge of said canopy; and

(e) an air duct extending from said housing for exhausting air and any mercury vapor from the interior of said housing and thereby maintaining a pressure less than atmospheric in said housing.

4,197,647
DENTAL PLIERS

Edgar J. Goldenthal, 240 Central Park South, New York, N.Y. 10019

Continuation-in-part of Ser. No. 740,986, Nov. 11, 1976, abandoned. This application Apr. 3, 1978, Ser. No. 893,095
Int. Cl.[2] A61C 3/16
U.S. Cl. 433—159 18 Claims



1. Dental pliers for removal of a dental, prosthesis from a tooth in the mouth, comprising:

a pair of arms, each arm having a clamping portion and a handle portion, each clamping portion having a clamping section;

clamps means comprising a clamping receptacle for holding therein a cushioning insert on said clamping section of each arm, said clamp means being position for cooperating with each other in seizing and releasing a prosthesis;

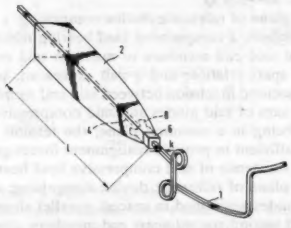
pivot means joining said arms for rotation relative to each other, said clamping portions, exclusive of said clamp means, lying in a single plane perpendicular to said pivot means and each having a curvature approximating that of the dental arch in a mouth, the curvatures of said clamping portion being in the same direction in said plane, said clamp means extending from said clamping section in a direction perpendicular to said plane and thus parallel to said pivot means; and

fulcral projection means extending from one of said pivot means and an arm, said fulcral projection means being positioned for rotation of said pliers for removal of a prosthesis from a tooth, the direction of removal of said prosthesis being initially parallel to the long axis of said tooth, and said handle portions being disposed relative to said clamping portion for avoiding interference with the cheek of a patient.

4,197,648
METHOD AND APPARATUS FOR PRODUCING A BEND OF SQUARE STEEL WIRE

Roswitha Aichinger, Schlossgartenweg 5, Munich, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,305
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1977, 2711688
Int. Cl.[2] A61C 7/00
U.S. Cl. 433—3 9 Claims

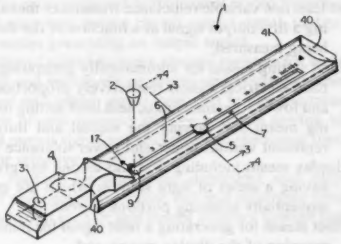


1. A method for tooth regulation through the application of force to a tooth through a band affixed thereto comprising the steps, of producing a bend in a square steel wire by means of a loop bending pliers, by securing a portion of the wire against torsion about its longitudinal axis in a holding device and leaving a portion of the wire in an unsupported condition extending from the holding device bending the unsupported portion to the desired curvature and subsequently fixing the bent wire in the band.

4,197,649
LINEAR MARKING DEVICE

Joseph B. Flinn, General Delivery, Troy, Ohio 45373

Filed Jul. 24, 1978, Ser. No. 927,407
Int. Cl.[2] B43L 7/00, 13/00
U.S. Cl. 33—488 7 Claims



1. A linear marking device for use with an implement having a marking element comprising a body constructed of transparent material, said body comprising:

(a). an elongated member having an arcuate upper surface having magnifying characteristics and an opposed planar surface, said opposed planar surface having a recessed flat perimeter area between parallel straight edges,

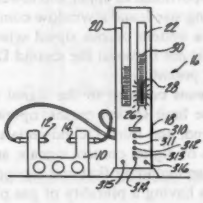
(b). A slot cut through said arcuate surface parallel to said straight edges, and communicating with said recessed flat perimeter area,

(c). said flat perimeter area forming a cavity of sufficient depth to allow said marking element when passed through said slot to extend into said cavity to be placed beneath said arcuate surface at a position where it can be magnifiedly seen through said arcuate surface.

4,197,650
COMPACT COLUMN GAGE

Kurt W. Bailey, Royal Oak, and Richard O. Juengel, Romeo, both of Mich., assignors to The Valeron Corporation, Oak Park, Mich.

Filed Aug. 22, 1978, Ser. No. 936,575
Int. Cl.[2] G01B 7/02
U.S. Cl. 33—143 L 34 Claims



1. A part sizing system comprising:

a bar graph display device having a series of light sources which are energized by sequentially scanning portions thereof;

first means for automatically providing an electrical signal indicative of an upper tolerance limit for a part being sized

and including adjustment means for varying the signal to represent various upper tolerance limits;

second means for automatically providing an electrical signal indicative of a lower tolerance limit for a part being sized and including means for varying the signal to represent various lower tolerance limits;

reset means for generating a reset signal for reinitializing the scanning of the bar graph display; and

switch means for alternately coupling the output of said first and second signal means to the bar graph display depending on the number of reset signals generated so as to superimpose visual indications of said upper and lower tolerance limits on said display, with each tolerance limit being distinguishable from the other by different light intensities.

7. A part sizing system comprising:

at least one variable reluctance transducer means for providing a first output signal as a function of the size of the part being measured;

limit setting means for automatically generating second and third electrical signals respectively proportional to upper and lower tolerance limits, said limit setting means including means for varying the second and third signals to represent various upper and lower tolerance limits;

display means including first and second bar graph displays having a series of light sources which are energized by sequentially scanning portions thereof;

reset means for generating a reset signal for reinitializing the scanning of the display means; and

interface means coupling said first signal, said second signal, and said third signal to the display means, with the first signal being coupled to one bar graph display, and the second and third signals being alternately coupled to the other bar graph display depending on the number of reset signals generated so as to visually superimpose visual indications of both the upper and lower tolerance limits on the same bar graph display.

29. An electronic column gauge comprising:

first and second variable reluctance transducers, transducer excitation means and switch means coupling the excitation means to inputs of the first and second transducers;

signal conditioning means coupled to outputs of the first and second transducers and to the excitation means, including means for summing the transducer outputs whenever the switch means is in a first position and for subtracting the second transducer output from the first transducer output whenever the switch means is in a second position, demodulation means for generating a first DC potential proportional to a signal generated by the means for summing and subtracting;

limit setting means having an input coupled to an output of the signal conditioning means, means for generating selectively variable second and third DC potentials respectively proportional to upper and lower tolerance limits for a part being sized, and a window comparator operative to generate a system output signal whenever the first DC potential is not between the second DC potential and the third DC potential;

interface means coupled to the signal conditioning means and to the limit setting means, operative to convert the first, second, and third DC potentials into corresponding pluralities of digital control signals; and

display means including first and second bar graph indicating means having a plurality of gas plasma light sources, said display means coupled to corresponding pluralities of digital control signals and operative to provide a visual indication on the first bar graph means of a level proportional to the first DC potential, and to visually superimpose indications on the second bar graph means of second and third levels respectively proportional to the second and third DC potentials.

4,197,651

CONTINUOUS TESTING OF THE THICKNESS OF THE ENAMEL COATING OF ELECTRIC WIRES

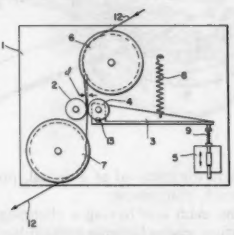
Wilhelm Dussel, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 6, 1978, Ser. No. 884,004

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1977, 2713576

Int. Cl.[2] **G01B** *7/06*

U.S. Cl. 33—143 L **3 Claims**



1. A process for continuously testing the thickness of enamel coating on electrical wires in which a device is utilized in conjunction with the coating unit which has an inlet roller, fixed and movable measuring rollers located downstream from the inlet roller and an outlet roller located downstream from the measuring rollers, said process comprising the steps:

feeding the wire into the device over said inlet roller and between said measuring rollers;

Passing the wire around over said fixed measuring roller between said inlet and outlet rollers such that the wire is deflected over said roller and has a wrap-round angel ϕ with a value of $0 \leqq \phi \leqq 15°$, and preferably of $1 \leqq \phi \leqq 5°$;

positioning the fixed and movable measuring rollers relative to each other such that the plane of symmetry which is perpendicular to the axis of said fixed measuring roller is vertically displaced by an amount h relative to and parallel to the corresponding plane of symmetry of the movable measuring roller, where the valve of h is $0.5 \leqq h \leqq 2$ mm, and preferably $1 \leqq h \leqq 1.5$ mm;

pivoting said movable measuring roller on a lever by means of which the movement of said measuring roller away from said fixed measuring roller is transmitted to a measurement indicator; and

removing said wire from the device over said outlet roller.

4,197,652

PLANE OF REFERENCE DEVICE

Franklin D. Qurnell, and Charles B. Patterson, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Apr. 27, 1978, Ser. No. 900,437

Int. Cl.[2] **G01B** *5/25, 5/20;* **G21C** *17/00;* **F16C** *29/00*

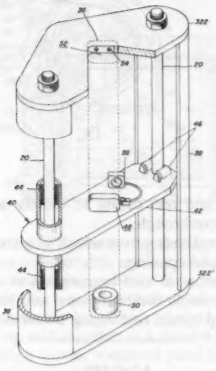
U.S. Cl. 33—174 Q **31 Claims**

2. A plane of reference device comprising: a pair of spaced end members; a compressive load bearing member positioned between said end members to maintain said end members in spaced apart relation; and a pair of spaced, parallel aligned guides secured in tension between said end members, the longitudinal axes of said guides and said compressive load bearing means being in a common plane, the tension in said guides being sufficient to provide realignment forces greater than the torsion resistance of said compressive load bearing means.

3. A plane of reference device comprising: a pair of elongated guides positioned in spaced, parallel alignment between first and second spaced-apart end members; compressive load bearing means positioned between said end members to maintain said end members in spaced apart position; tension adjust-

ing means operative between said guides and at least one of said end members for placing said guides in tension between said end members whereby parallel alignment of said guides is maintained; and spherical ball seating means between said tension adjusting means and the adjacent end member.

7. A plane of reference device comprising: a pair of spaced, elongated guides secured in tension between first and second spaced-apart end members; and compressive load bearing means positioned between said end members to maintain said end members in spaced apart position, said compressive load



bearing means comprising a beam positioned between said guides.

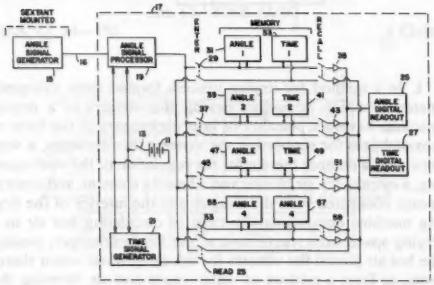
10. A plane of reference device comprising: a pair of spaced, elongated guides secured in tension between first and second spaced-apart end members; and compressive load bearing means positioned between said end members to maintain said end members in spaced apart position, said compressive load bearing means comprising a pair of arcuately shaped side members positioned such that said guides are between said side members.

4,197,653

ELECTRONIC SEXTANT

Darryl E. Laxo, 10 Zanco Way, Novato, Calif. 94947

Filed Dec. 27, 1977, Ser. No. 864,354
Int. Cl.[2] G01C *17/34*
U.S. Cl. 33—268 **5 Claims**



1. An electronic sextant comprising:

(a) sextant having at least one arm, a main body, and a pivot pin, said pivot pin connected to said main body and said arm rotatably connected to said pivot pin;

(b) angle signal generator generating an electronic angle signal resulting from rotation of said arm on said sextant, said angle signal generator detachably mounted on said arm;

(c) means for attaching one side of said angle signal generator to said pivot pin of said sextant;

(d) means for fastening the other side of said angle signal generator to said arm of said sextant, said fastening means fixably enclosing said angle signal generator upon said arm;

(e) transducer connected to said angle signal generator and between said attaching means and said fastening means, said transducer outputting an electrical signal corresponding to amount of rotation of said arm about said pivot pin;

(f) electronic timing circuit for generating an electronic timing signal, said timing circuit connected to said angle signal generator and generating an output signal;

(g) means for processing said output signal of said transducer and said electronic timing circuit output signal, said processing means generating an output signal;

(h) a plurality of paired memory storage registers for instantaneously and selectively receiving said electronic timing signal and said output signal from said processing means, each pair of said memory storage registers storing said received output signal and said received electronic timing signal for selective recall; and

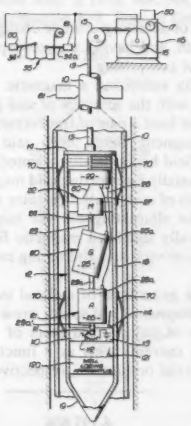
(i) digital readout for selectively displaying said output signal of said processing means and said electronic timing signal stored in each of said paired memory storage registers.

4,197,654

SURVEY APPARATUS AND METHOD EMPLOYING ALL LATITUDE, ALL ATTITUDE GYROCOMPASSING

Donald H. Van Steenwyk, San Marino; John R. Cash, and Paul W. Ott, both of Pasadena, all of Calif., assignors to Applied Technologies Associates, San Marino, Calif.

Filed Jul. 17, 1978, Ser. No. 924,931
Int. Cl.[2] E21B *47/024;* **G01C** *19/38*
U.S. Cl. 33—304 **24 Claims**



1. In apparatus for determining azimuth, the combination that comprises

(a) rate-of-turn gyroscope means including a main frame and a sub-frame carrying spin rotor means,

(b) primary means to support the gyroscope means for lengthwise travel along a travel axis, and to be rotated, the spin rotor means having substantial spin axis components along said travel axis and in a direction normal to said travel axis, the quotient of said spin axis component along

the travel axis divided by the spin axis component normal to said travel axis being the tangent of an angle which is at least about 10°,

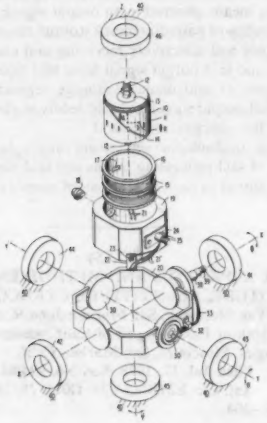
(c) said primary means connected with the main frame to continuously and unidirectionally rotate the main frame about the travel axis independently of the position of the sub-frame relative to the main frame, said travel axis intersecting the gyroscope means.

4,197,655

GYROSCOPIC METHOD AND APPARATUS FOR DETERMINING MAGNETIC HEADING AND ATTITUDE

Nathaniel N. Moore, Lake Hopatcong, N.J., assignor to Cessna Aircraft Company, Wichita, Kans.

Filed Nov. 9, 1977, Ser. No. 849,831
Int. Cl.[2] G01C *19/00, 19/38*
U.S. Cl. 33—318 **23 Claims**



1. A method of detecting attitude changes of a body traversing a given path, and having a gyroscope means including a gyroscope rotor comprising

gyroscopically stabilizing a magnetic field sensor in axial alignment with the spin axis of said gyroscope rotor,

establishing at least a pair of transversely related alternating current magnetic fields, each said alternating current magnetic field being fixedly oriented with respect to said body and axially intersecting said magnetic field sensor on the spin axis of said gyroscope rotor so that signals generated by the alternating current magnetic fields in said gyroscopically stabilized magnetic field sensor are equal and zero as to each said alternating current magnetic field, and

indicating the generation of a signal in said gyroscopically stabilized magnetic field sensor upon changes in the axial orientation of any of said pairs of transversely related alternating current fields as a function of the angle of change in axial orientation, respectively.

4,197,656

CHALK LINE DISPENSER

Derek Lane, Santa Rosa, Calif.; Thomas G. Farr, 2982 Harris St., Eureka, Calif. 95501, and Stuart L. Galles, 578 Meadowlark, Livermore, Calif. 94550, assignors to Thomas Farr and Stuart Galles by said Derek Lane

Filed Sep. 27, 1978, Ser. No. 946,108
Int. Cl.[2] B44D *3/38*
U.S. Cl. 33—414 **7 Claims**

1. A chalk line dispenser comprising:

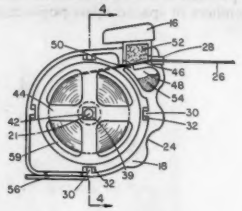
a housing including separable drive casing and reel casing;

a drive shaft rotatably mounted in said housing;

spring means in said drive casing operative to drive said shaft;

a reel in said reel casing received on said shaft for rotation therewith by said spring means to wind a chalk line thereon;

interlock means on said casings to prevent relative rotation thereof;



an opening in said reel casing to closely accommodate a chalk line therethrough;

a ledge in said reel casing over which an incoming chalk line passes from said opening;

s squeegee member in said housing above said ledge and manually moveable therein toward said ledge; and

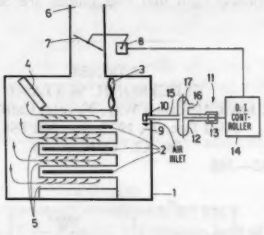
a moisture sump in said reel casing below said ledge.

4,197,657

PROCEDURE FOR DRYING AN ORGANIC, MOST APPROPRIATELY AXYLOGENIC MATERIAL, SUCH AS VENEERS FOR INSTANCE

Ilkka M. Leino, Pajalahdentie 17 D, 00210 Helsinki 21, and Martti H. Leino, Lauttasaarentie 7, 00200 Helsinki 20, both of Finland

Filed Feb. 21, 1978, Ser. No. 879,257
Int. Cl.[2] F26B *5/04*
U.S. Cl. 34—15 **9 Claims**



1. In a method for drying veneers formed from xylogenic material, which comprises drying the veneers in a drying machine having a plurality of heat exchangers in the form of nozzle boxes for supporting the veneers therebetween, a vent pipe with a damper therein for the regulation of the vent opening, a circulatory air blower and a heating element, and control means connected with the damper and the interior of the drying machine comprising the steps of circulating hot air in a drying space from the blower to the heat exchanger, passing the hot air passed the veneers for releasing water vapor therefrom, to form a mixture of water vapor and air, blowing the mixture of water vapor and air by means of said blower passed said vent pipe and through said heater, conducting a part of the mixture of water vapor and air through said vent pipe for venting therethrough into the free atmosphere, in which the improvement comprises:

continuously monitoring the pressure in the drying space in

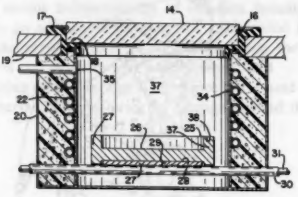
the drying machine to control the movement of the damper to control the quantity of the mixture of air and water vapor which is vented through the vent pipe to provide a predetermined vacuum in the drying space.

4,197,658

TISSUE FREEZE DRYER

Douglas S. Fraser, New Paltz, N.Y., assignor to FTS Systems, Inc., Stone Ridge, N.Y.

Filed May 12, 1978, Ser. No. 905,426
Int. Cl.[2] F26B *13/30*
U.S. Cl. 34—92 **9 Claims**



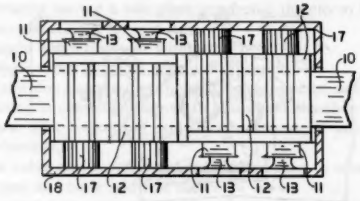
1. A freeze dryer assembly for drying and impregnating tissue specimens with paraffin or resin, said assembly including a vacuum chamber having an outlet for connection to a source of vacuum, a closure means for fluid-tightly sealing said chamber, chamber walls, cooling means integral with said chamber walls for cooling said chamber to a desired temperature under vacuum, a heating means, a support plate fixedly mounted on said heating means for the support of a specimen holder, said specimen holder being mateable with said support plate for substantial surface contact of said specimen holder with said support plate, said specimen holder and support plate formed of materials of good thermal conductivity, said specimen holder having peripheral walls about an upper surface, said peripheral walls being of a height and a thickness effective to minimize the effect of thermal differentials within said chamber on said upper surface of said specimen holder and thereby being capable of retaining said upper surface of said specimen holder at a substantially constant temperature.

4,197,659

DEVICE FOR DRYING TEXTILE WEBS

Wolfgang Brinkhaus, Hamburg, and Alfred Schraud, Seevetal, both of Fed. Rep. of Germany, assignors to Artos Dr.-Ing. Meierwindhorst KG (GmbH & Co.), Seevetal, Fed. Rep. of Germany

Filed Feb. 13, 1978, Ser. No. 877,451
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1977, 2705760
Int. Cl.[2] F26B *13/00*
U.S. Cl. 34—155 **4 Claims**



1. In a device for drying relatively wide textile webs, and the like, by means of a circulating, heated gas-like medium of the type including a drying chamber housing which defines a treatment chamber through which the web is passed horizontally therethrough, and a plurality of jet nozzle elements, each of which has an inlet opening for charging the treatment chamber with said treatment medium and a pair of upper and lower jet fingers which are symmetrically arranged relative to the web and extend over the total width thereof, so as to permit blowing of the treatment medium through the fingers and laterally across the upper and lower surfaces of the web, the inlet openings of the jet finger elements being alternately arranged on opposite lateral sides of the web, so as to ensure an even distribution of the treatment medium over the total face of the web, the improvement comprising:

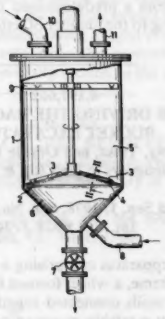
said jet nozzle elements being arranged consecutively in alternate adjacent pairs, with one pair of jet nozzle elements arranged with their inlet openings disposed on one side of the web and the next adjacent and following pair of jet nozzle elements arranged with their inlet openings on the other side of the web, and wherein said housing defines a separate discharge chamber disposed downstream of and opposite each of the inlet openings through which the medium flows from the treatment chamber, said discharge chamber leading to a common return flow chamber for each of said pair of jet nozzle elements, which is disposed directly beneath said treatment chamber and which leads the treatment medium discharged to said chamber in an opposite direction, directly back to said inlet openings, so as to provide a substantially closed circulatory path for each of said pair of jet nozzle elements, said housing having a heating element disposed in said common return chamber, which serves each pair of jet nozzle elements.

4,197,660

PROCESS FOR CRYSTALLIZING AND DRYING POLYETHYLENE TEREPHTHALATE AND APPARATUS TO CARRY OUT SAID PROCESS

Siegfried Breitschaft, Augsburg, and Rolf Holtermann, Tafertingen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 751,014, Dec. 16, 1976, Pat. No. 4,120,849. This application Aug. 2, 1978, Ser. No. 930,335
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1975, 2558730
Int. Cl.[2] F26B *17/22*
U.S. Cl. 34—166 **1 Claim**

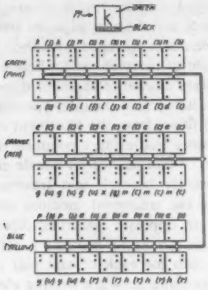


1. Reactor for crystallizing and drying amorphous polyethylene terephthalate granules by treating same with hot gases comprising a cylindrical drying zone closed at its lower end by a planar perforated or conical perforated tray rotating about its vertical axis and provided with stripping edges and discharge slots, said tray being mounted in concentric position and nearly scrapes along the reactor wall, a chamber below the perforated tray into which the hot gas is introduced and from which the dried material is discharged.

4,197,661
EDUCATIONAL TOYS

Peter H. Cook, 39 Romer Ave., Lewisham, London, S.E. 13, England, and Joseph A. H. Holmes, London, England, assignors to B & H Commercial Inventors & Designers Limited and Peter Henry Cook, both of London, England

Filed Feb. 25, 1977, Ser. No. 772,093
Claims priority, application United Kingdom, Mar. 9, 1976, 9390/76; Jul. 12, 1976, 28962/76
Int. Cl.[2] G09B 1/10
U.S. Cl. 35—35 H 11 Claims



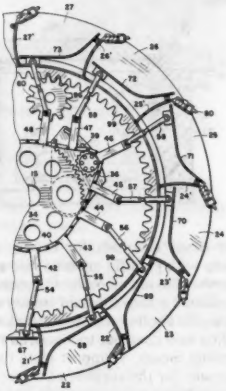
1. An educational toy comprising:
(a) a supply of elements each bearing a single letter on its front face and having on its rear face an interlocking means specific to the element;
(b) support means having individual stations for receiving the elements in interlocking relationship, the stations being either pre-arranged as a word or being present on individual reference elements which can be arranged as a word, whereby only correctly chosen letter elements can be interlockingly engaged so as to spell the word,
characterized in that the front faces of the letter elements are identical except for the marked letter and the colour, the supply of letter elements being divided into differently coloured groups there being not less than three and not more than seven letter elements in each colour group, and the stations of the support means having the appropriate letter colour, whereby an appropriate letter element can be chosen from a predetermined number of possibilities corresponding to the number of letter elements having the same colour.

4,197,662
MEANS FOR DRIVING THE BACK WALLS OF A BUCKET EXCAVATOR

Hubert J. McAulay, Tulsa, and Orville B. Francis, Claremore, both of Okla., assignors to Unit Rig & Equipment Co., Tulsa, Okla.

Filed Sep. 1, 1978, Ser. No. 938,857
Int. Cl.[2] E02F 3/24
U.S. Cl. 37—189 5 Claims

1. Excavating apparatus comprising a frame, a central shaft attached to said frame, a wheel formed from a pair of concentric circular side walls connected together in spaced parallel relation and freely rotatably mounted on said central shaft, a plurality of circumferentially spaced and stationary front walls extending transversely across said wheel and connected to said side walls, said stationary front walls also extending generally radially outwards toward the periphery of said side walls and terminating in cutting edges extending beyond the periphery of said circular side walls, said spaced stationary front walls forming a plurality of digging buckets located around the circumference of the excavating wheel, each bucket having a pivotal back wall extending between said side walls and pivotally connected thereto adjacent the periphery of said side walls and also adjacent the stationary front wall of the next adjacent bucket, each back wall being pivotal outwardly relative to said central shaft to a material dumping position and inwardly relative to said central shaft to a material receiving position, central chain guide means freely rotatably mounted on said central shaft, offset chain guide means freely mounted for rotation on an axis parallel to and adjustably spaced from said central shaft, a continuous chain formed from a plurality of links passing around said sprockets, a plurality of push rods, a plurality of pivotal connecting links spaced equally along said chain, one push rod for each pivotal back wall, each push rod

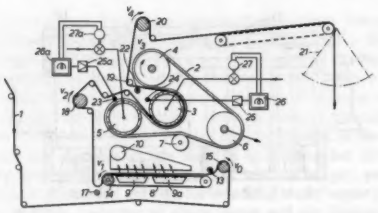


being pivotally attached at one end to one of said pivotal back walls, an end of each push rod opposite from said one end being pivotally attached to ne of said connecting links of said chain, whereby when said wheel rotates, each push rod exerts force on each pivotal connecting link, moving said chain around said sprockets, and whereby movement of said chain causes each push rod to urge its associated back wall to pivot to its material dumping position as each push rod passes adjacent to said offset sprocket and thereafter pivoting its associated back wall to its material receiving position after said push rod passes beyond said offset sprocket.

4,197,663
APPARATUS FOR CONTINUOUS PRESSING AND STEAMING OF FABRIC

Dieter Riedel, Porta Westfalica, Fed. Rep. of Germany, assignor to Firma Drabert Sohne, Hanover, Fed. Rep. of Germany

Filed Sep. 21, 1978, Ser. No. 944,577
Int. Cl.[2] D06F 69/02, 71/34, 87/00
U.S. Cl. 38—3 9 Claims



1. In an apparatus for the continuous pressing and decatizing of cloth and fabric material, an arrangement comprising
a rotatably-mounted, heatable cylinder, having a smooth surface,

controllable first heating means arranged to heat said cylinder,

a pressure belt in direct contact with material undergoing treatment to press said material into direct contact with the smooth surface of the cylinder,

rollers for circulating the pressure belt, said rollers including a roller arranged upstream of the cylinder in the direction of belt circulation,

second heating means arranged to heat the said upstream roller whereby to heat the pressure belt prior to passage around the heatable cylinder,

control means for controlling the temperature of the second heating means independently of the first heating means whereby an adjustable temperature differential is set up across the material as it is pressed between the smooth surface of the cylinder and pressure belt, and

a moisturizing device arranged upstream of the said cylinder to moisturize material prior to passage around the cylinder.

4,197,664

STEAM IRON

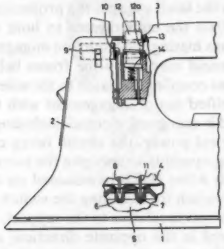
Urs Hammer, Oberbuchsiten, and Ernst Gisiger, Niederbuchsiten, both of Switzerland, assignors to Jura Elektroapparate-Fabriken L. Henzirohs A.G., Solothurn, Switzerland

Filed Jan. 16, 1978, Ser. No. 869,452

Claims priority, application Switzerland, May 9, 1977, 5780/77

Int. Cl.[2] D06F *75/06*

U.S. Cl. 38—77.83 **5 Claims**



1. A steam iron, comprising,

a housing having a sole plate connected thereto to form a bottom surface for said iron,

a single water reservoir within said housing,

a single steam chamber within said housing,

at least one steam outlet through said sole plate, said outlet being in communication with said steam chamber,

a first duct connecting said water reservoir to said steam chamber,

first valve means connected to said first duct to selectively open and close said first duct,

a second duct connecting said water reservoir to said steam chamber, and

a normally closed second valve means connected to said second duct to momentarily open said second duct to provide an amount of water to said steam chamber in addition to the amount of water provided through said first duct.

4,197,665

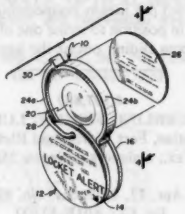
IDENTIFICATION LOCKET

Donald H. Siiter, 930 E. Orange St., St. Paul, Minn. 55106

Filed Nov. 22, 1978, Ser. No. 963,033

Int. Cl.[2] G02B *7/02*

U.S. Cl. 40—365 **13 Claims**



1. An information locket for the storage and immediate retrieval of information, the information locket comprising:

an outer housing including substantially parallel front and back walls which are connected by a first partial outer housing side wall which follows the periphery of the front and back walls for a portion of the periphery;

an inner member having a storage position between the front and back walls of the outer housing, with a similar configuration as the front and back walls, the inner member including magnifying means having one convex surface and one substantially flat surface and an inner member side wall surrounding at least a portion of the magnifying means, the inner member side wall having a portion which forms a second partial outer housing side wall when the inner member is in its storage position and a remaining portion which conforms with the configuration of the inner surface of the first partial outer housing side wall when the inner member is in the storage position, one of the surfaces of the magnifying means and the inner member side wall forming a compartment;

connecting means for pivotally connecting the inner member with the outer housing, enabling the inner member to be pivotally moved from the storage position within the outer housing to a viewing position; and

an information bearing member having information thereon which is substantially reduced and which is human readable when magnified by the magnifying means, the information bearing member being lodged in the compartment and being removable from the compartment when the inner member is pivotally moved to the viewing position.

4,197,666

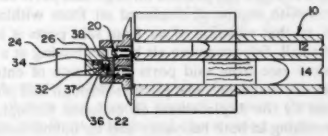
DUAL CALIBER REVOLVER

Gim S. Ng, Newport News, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 24, 1978, Ser. No. 899,772

Int. Cl.[2] F41C *1/00*

U.S. Cl. 42—59 **1 Claim**



1. In a dual caliber revolver of the type having: (1) a frame, (2) two barrels attached thereto, (3) a means for supporting the two barrels so that one is beside the other, (4) a cylinder having the two sizes of cartridge chambers alternately concentrically

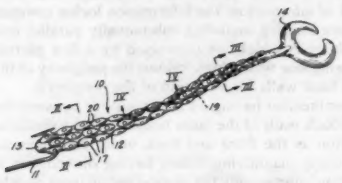
arranged and adjacently aligned to register with their respective barrels, (5) a pair of firing pins mounted laterally in the frame, each pin being in alignment with its barrel and with the cartridge chamber registering therewith, and (6) means carried by the hammer for selectively striking one of the firing pins comprising (a) a firing pin striker plate, (b) keyway means rendering the striker plate slideable from one side of the hammer to the other, (c) pin means cooperating with recesses for locking said plate in position to strike one of the firing pins and to preventing it from sliding out of the keyway.

4,197,667

BUBBLING FISHING LURE

Ronald A. Helfenstine, Fort Worth, and Richard W. McDaniel, Hurst, both of Tex., assignors to Sports Marketing, Inc., Fort Worth, Tex.

Filed Apr. 17, 1978, Ser. No. 896,755
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.06 **5 Claims**



1. In a fishing lure having a body provided with an outer surface:

said body having throughout a major length portion thereof an all-over pattern of a plurality of air trap pockets each of which is of substantially shallower depth than the diameter of the body and normally at least partially empty;

said air trap pockets being of cone shape with the base of the cone at the inner end of the respective pocket;

a port at the apex of each of said cone shape pockets, said port in each instance being of substantially smaller diameter than the base of the cone;

said ports being located at the outer surface of said body;

said body being formed from a soft resiliently flexible material and having an array of nodes projecting on said surface and said pockets being located in said nodes;

said cone shape of each of said pockets being defined by a conical wall in the pocket tapering convergently from the base of the pocket to the port of the pocket;

a head end length of said body being solid and the base ends of the cone shape pockets being blind ended in said solid length;

a second length of said body rearwardly from said head length having a longitudinal air chamber therein;

and the base ends of the cone shape pockets in said second length of said body communicating with said air chamber;

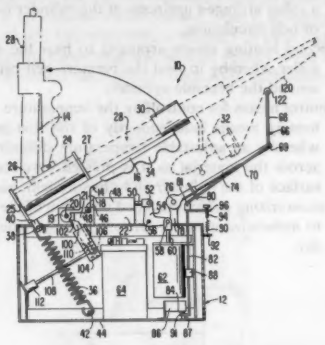
whereby on entry of the lure into water, air in said pockets and said chamber provides some buoyancy for said lure and said small diameter of said ports not only restricts entry of water into the pockets through said ports but also interferes with escape of displaced air from within said pockets, so that emission of air from said ports is in the form of small, fish-attracting air bubbles issuing at a relatively slow rate from said ports as the rate of entry of displacement water into said pockets through said ports is restrained by the displacement air emission through said ports, resulting in both buoyancy and air bubble emission being prolonged, and the soft material of said body and said nodes being displaceable when a fish strikes and squeezes the body so that water trapped in said pockets may squirt out through said ports in the squeezed portion of the body.

4,197,668

HOLDER FOR FISHING ROD

Joseph G. McKinsey, 3524 35th St., Sacramento, Calif. 95817

Filed May 10, 1978, Ser. No. 904,661
Int. Cl.[2] A01K *91/06*
U.S. Cl. 43—15 **5 Claims**



1. A holder for a fishing rod having a line comprising: a frame defining a support, said frame having an upper part; a holder member for a fishing rod, said holder member including a rigid bar having a tube attached thereto near one end thereof, the tube having an open end for receiving the butt end of the fishing rod, the bar having a U-shaped element near the opposite end for receiving an adjacent part of the fishing rod when the butt end of the fishing rod is received in the tube; an L-shaped projection rigid at one end thereof to the bar intermediate the ends of the bar and extending downwardly therefrom; pin means pivotally mounting the outer end of the projection on the upper part of the frame to permit the bar to move from a generally inclined position to a generally vertical position and return; a latch shiftably mounted on the upper part of the frame and moveable along a rectilinear path into and out of a location in which the latch engages the projection at a location thereon intermediate the ends thereof to hold the bar in the first position; means biasing the latch into engagement with the projection; a solenoid carried by the frame below the upper part thereof; means coupling the latch to the solenoid to permit the latch to be shifted out of engagement with the projection when the solenoid is energized; a circuit including a switch and a source of electrical power, the circuit being coupled to the solenoid and being operable to energize the solenoid when the switch is actuated; a rod shiftably mounted on the frame and coupled with the switch for actuating the switch when the rod is shifted in one direction relative to the support; means adjustably biasing the rod in the opposite direction; and means including a crank-like triggering device coupled with the rod and adapted to be coupled with the line of the fishing rod for shifting the rod in said one direction in response to an increase in tension on the line.

4,197,669

CONSTRUCTION ELEMENTS AND ASSEMBLED STRUCTURES

Bernard D. Hynes, 1425 S. Milwaukee St., Denver, Colo. 80210

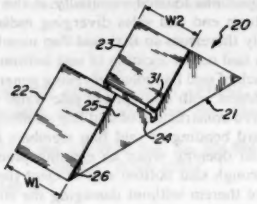
Filed Aug. 1, 1977, Ser. No. 820,802
Int. Cl.[2] A63H *33/08*
U.S. Cl. 46—25 **33 Claims**

1. A construction element comprising:

a body having first and second symmetrically arranged body portions of a corresponding shape, said first and second body portions being mirror images on opposite sides of a dividing line, and having common sides connected end-to-end to form a common side and common base for said body,

each of said body portions having three projections with each of said projections having two external surface portions in the planes of two sides of a preselected triangular shape,

one projection of each of said body portions being cut off at the end and the cut-off projections joined together to provide two adjacent projections that extend in the same direction along spaced parallel planes, a recess between said adjacent projections, and two oppositely



arranged projections so that said body has the form of two triangular shapes with overlapping projections, two adjacent sides of the two triangular shapes intersecting above two common sides and two oppositely arranged sides, the length of said two adjacent sides being equal, the length of each oppositely arranged side to the length of an adjacent side of each triangular shape of each of said bodies being of a selected ratio of a number greater than one to one.

4,197,670

DOLL WITH POUCH

Zula B. Cox, Rte. 1 - Box 5A, Folsom, La. 70437

Filed Oct. 6, 1978, Ser. No. 949,363

Int. Cl.[2] A63H *3/02*; G09B *23/30*

U.S. Cl. 46—153 **3 Claims**

1. An educational toy comprising:

a doll body having a trunk section, arms,legs, and a head;

the trunk section, arms, legs and head each having a fabric cover and being stuffed with a filler material;

the arms having hand portions with front and back panels;

adherent patches on one front panel of one of the hands, and on the back panel of the other hand;

the arms being adapted for positioning with the adherent patches in contact;

the doll body having a fabric garment thereon, with an adherent section thereon;

the trunk section having a body cavity formed therein, and having a door hingedly secured thereto and adapted to overlie the body cavity;

the fabric cover of the trunk section, and the door having adherent strips to hold the door in said overlying position relative to the body cavity;

a second doll of diminutive dimension relative to the doll body representing a baby and adapted to position in said body cavity; the second doll having a strip of adherent material thereon; and

the second doll being attached temporarily to the adherent section on the garment when removed from said cavity.

4,197,671

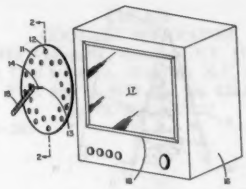
KINEMATIC OPTICAL DEVICE

Walter W. De Brouwer, 305 Norwegian Ave., Modesto, Calif. 95350

Filed Sep. 2, 1977, Ser. No. 830,186

Int. Cl.[2] A63H *33/28*

U.S. Cl. 46—226 **4 Claims**



1. An improved optical amusement device of the class consisting of a light source pulsating at a constant rate and in optical alignment therewith a disc containing perforations, said disc rotating about a central axis at variable rotational speeds, the improvement comprising a disc containing perforations in at least one area, each such area involving a definitive area of said disc within a first predetermined radial distance and a second predetermined radial distance from said central axis defining a captive area of motion whereby light from the light source passing through said perforations produces the optical effect of dynamic motion within said captive area wherein at least a portion of said perforations are the repeating pattern style.

4,197,672

MODEL RACING CAR

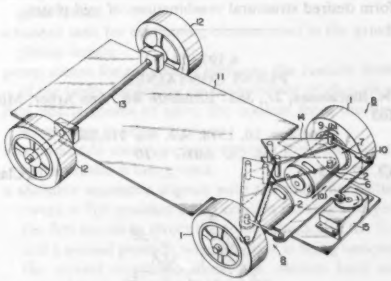
Kenichi Mabuchi, and Tatuo Katunuma, both of Matsudo, Japan, assignors to Mabuchi Motor Co. Ltd., Tokyo, Japan

Filed Nov. 22, 1978, Ser. No. 962,932

Claims priority, application Japan, Dec. 7, 1977, 52-146904

Int. Cl.[2] A63H *30/00, 31/00*

U.S. Cl. 46—254 **5 Claims**



1. A model racing car having front wheels, rear wheels, drive motors and a radio control receiver, the drive motors driving the front wheels and the steering angle of the front wheels being controlled by the output of the radio control receiver, characterized in that the drive motors, together with reduction gear devices, are mounted independently on each of the front wheels, the steering angle being controlled by rotating in an interlocking fashion a plurality of front wheel blocks

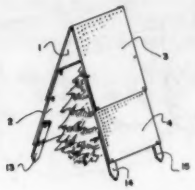
by means of the output of the radio control receiver, each of the blocks comprising the front wheel, the reduction gear device and the drive motor as one block.

4,197,673

PLANT, SHRUB AND TREE PROTECTOR GARDEN PANEL

David V. Thomas, 2211 Reeves Cr., Ottawa, Ontario (K1H 7H3), Canada

Filed Nov. 24, 1978, Ser. No. 963,925
Int. Cl.² A01G *13/02*
U.S. Cl. 47—26 **1 Claim**



1. A plant, shrub and tree protector for protecting plants, shrubs and trees from snow and ice, said plant, shrub and tree protector comprising

a plurality of rectangular sheet-like plates of substantially rigid material each having a plurality of square holes formed therethrough in rows and columns;

a plurality of anchoring strips of substantially rigid material each being of substantially elongated narrow rectangular configuration with a point formed at one narrow end thereof for penetrating the ground and each having a plurality of square holes formed therethrough in rows and columns;

a plurality of selectively openable and closable rings having a diameter sufficient to accommodate two of said plates and passable through the holes thereof; and

a plurality of bolts and corresponding wing nuts, each of the bolts having a head with an extending square cross-sectioned shank portion fittable in the holes of the plates and strips whereby said plates are securable to each other via said bolts and wing nuts in any desired structural combination, said anchoring strips are securable to said plates via said bolts and wing nuts in any desired manner to secure said plates in the ground, and said rings are extendible through selected holes of selected ones of said plates to form desired structural combinations of said plates.

4,197,674

PLANT CONTAINER

Fred N. Blackmore, Jr., 3627 Elizabeth Rd., Ann Arbor, Mich. 48103

Filed Jun. 16, 1978, Ser. No. 916,260
Int. Cl.² A01G *9/10*
U.S. Cl. 47—73 **1 Claim**

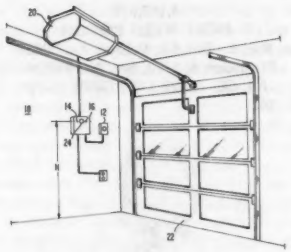
1. A plant container comprising a body member having a plurality of downward extending compartments, each compartment having an open top end and being adapted to contain a dirt ball having the root structure for a growing plant contained therein, downwardly converging curved side walls terminating at a rounded bottom end of each compartment, at least a portion of said side walls being generally upright above said rounded bottom end, the bottom end of each compartment being formed of thin yieldable material and having criss-crossed slits formed therethrough extending upwardly from said bottom end and into said upright portion of said curved side walls, said slits defining and giving yieldability to a plurality of upwardly and inwardly bendable V-shaped flap members having end portions located essentially at the center of said rounded bottom end and sides diverging radially outwardly and upwardly therefrom so that said flap members curve upwardly from said center location of said bottom end, at least a portion of each of said flap members being generally upright in general alignment with said upright side walls, the thin yieldable and curved construction of said flap members enabling the reverse inward bending of said flap members on themselves establishing an opening when an ejecting plunger is moved upwardly through said bottom end to eject the dirt ball and root structure therein without damaging the structural integrity thereof.

4,197,675

SENSING SYSTEM FOR AUTOMATICALLY OPENING GARAGE DOORS

Edward Kelly, 106 Nottinghill La., Trenton, N.J. 08619

Filed Mar. 27, 1978, Ser. No. 890,741
Int. Cl.² E05F *15/20*
U.S. Cl. 49—31 **11 Claims**



1. A sensing system for use in a garage or other similar enclosure having an automatic door operator for automatically opening a garage door responsive to a lack of sufficient oxygen therein comprising:

(a) a gas detection means located within the enclosure and responsive to the presence of below a predetermined minimum amount of oxygen to emit an electrical signal;

(b) a detection relay means in electrical communication with said gas detection means and adapted to be actuated upon receiving an electrical signal generated from said gas detection means;

(c) a normally open detection switch means in electrical communication with said detection relay means and adapted to close responsive to actuation of said detection relay means;

(d) a door opening control circuit means electrically connected to the automatic door opener to cause operation thereof for opening a door into the enclosure, said door opening control circuit means including therein said normally open detection switch means and:

(1) a first switch means adapted to be open responsive to the door being opened and adapted to be closed responsive to the door being in a closed position in order to allow operation of said automatic door opener only when the door is in the closed position; and

(2) a delay clock means including a delay switch means

being normally closed to allow operation of the automatic door opener unless said delay clock means is operating; and

(e) a time delay circuit means including;

(1) a second switch means being normally open and adapted to close responsive to opening of the door; and

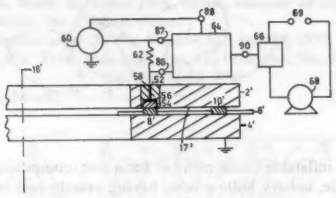
(2) a clock initiation means electrically connected to said delay clock means to cause actuation thereof and thus opening of said delay switch means for a predetermined period of time responsive to closing of said second switch means caused by opening and subsequent closing of the door.

4,197,676

APPARATUS FOR AUTOMATIC LAPPING CONTROL

Franz L. Sauerland, 2851 Southington Rd., Shaker Heights, Ohio 44120

Filed Jul. 17, 1978, Ser. No. 924,884
Int. Cl.[2] B24B *49/04*
U.S. Cl. 51—165 R **8 Claims**



1. Control apparatus for a machine for lapping wafers, said machine having at least one lapping plate with a lapping surface and at least one piezoelectric wafer, comprising:

a. At least one electrode (able to be inserted) in and isolated from said lapping plate, said electrode being faced with a solid dielectric material with a relative dielectric constant larger than 10 and being positionable toward the lapping surface;

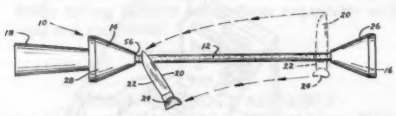
b. means for sensing the resonance frequency of piezoelectric wafers and means for terminating lapping when said resonance frequency reaches a predetermined relationship with a target frequency.

4,197,677

BLADE SHARPENER

Louis N. Graves, Anoka, Minn., assignor to Louis N. Graves Co., Inc., Anoka, Minn.

Filed Apr. 17, 1978, Ser. No. 896,936
Int. Cl.[2] B24D *15/06*
U.S. Cl. 51—214 **5 Claims**



1. A blade sharpener for sharpening the cutting edge of a blade to have a predetermined acute angular relationship to the nominal plane of the blade, said sharpener including:

(A) a relatively thin, cylindrical elongated sharpening rod;

(B) a pair of guide-guards fixedly positioned with respect to outer ends of said rod, said guide-guards each being partially defined by a conical guide surface in concentric relation to the longitudinal axis of said sharpening rod, said guide surfaces having the same angular relationship to the longitudinal axis of the rod as the predetermined desired relationship between a sharpened blade cutting edge to the nominal plane of the blade, said guide-guards each being further partially defined by a guard surface lying in a plane at right angles to the longitudinal axis of the sharpening rod, said guard surface defining the junction point of said rod and said guide-guard, the outer periphery of said guard surface terminating outwardly of the outer periphery of said sharpening rod; and

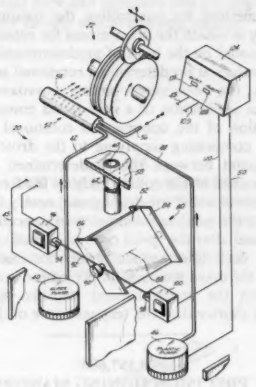
(C) handle means for positioning the sharpener during use.

4,197,678

COOLANT SEPARATOR

Guy Roll, 1493 Wagner St., Wantagh, N.Y. 11793, and Milton B. Savage, 1780 E. 9th St., Brooklyn, N.Y. 11223

Filed Jul. 12, 1978, Ser. No. 923,823
Int. Cl.[2] B24B *55/02*
U.S. Cl. 51—267 **26 Claims**



1. Coolant separator apparatus for a grinding machine of the type used to grind, shape and bevel ophthalmic lenses with a high speed wheel and utilizing recirculating coolants to promote grinding speed and grinding quality with respect to both glass and plastic lenses comprising;

a first tank for containing coolant used in the grinding of glass lenses;

a second tank for containing coolant used in the grinding of plastic lenses;

pump means for separately pumping the coolant from each of the tanks depending on the presence of glass or plastic;

first nozzle means to spray the coolant from the first tank when glass is being used;

second nozzle means to spray coolant from the second tank when plastic is being used;

a shiftable separator aligned with the tanks for shifting between a first position when coolant is being sprayed from the first nozzle to direct the coolant back into the first tank and a second position when coolant is being sprayed from the second nozzle to direct the coolant back into the second tank;

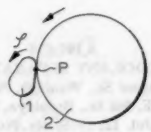
control means for shifting the separator between the first and second positions in conjunction with the pumping of coolant from the first and second tanks respectively; and

mounting means adapted to mount the coolant separator apparatus in a grinding machine in position to maintain the two coolants separate during the shaping and beveling of plastic and glass lenses in the machine and preventing the plastic and glass coolants from intermixing and contaminating one another.

4,197,679
METHOD FOR CONTROLLING THE ROTATIONAL SPEED OF A ROTARY BODY

Takuro Yamada, Kyoto; Yasuo Katsumi, Kameoka, and Shoei Matsuda, Otsu, all of Japan, assignors to Ito & Okamoto, Esq., Tokyo, Japan

Continuation-in-part of Ser. No. 787,940, Apr. 15, 1977, abandoned. This application Jun. 29, 1978, Ser. No. 920,355
Int. Cl.[2] B24B *1/00*
U.S. Cl. 51—281 C 2 Claims

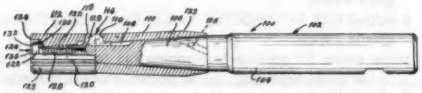


1. In a method for controlling the rotational speed of a rotary body in which the drive means for rotatably driving the body is actuated on the basis of predetermined step-like speed command values at predetermined rotational angular positions of the body, the drive means having a nonzero response time between the application of a new speed command value and the realization of the commanded rotational speed, the improvement comprising supplying to the drive means at each transition point between the predetermined step-like speed command values of the rotary body at least one intermediate speed command value for driving said rotary body at a speed intermediate the predetermined step-like speed command values before and after the speed change carried out at the transition point, each intermediate speed command value being supplied to the drive means for a period for causing the transition between the predetermined step-like speed command values to be shorter than the response time of the drive means.

4,197,680
PRECISION HONING MANDREL

Wayne W. Althen, and Harold T. Rutter, both of St. Louis County, Mo., assignors to Sunnen Products Company, St. Louis, Mo.

Filed Jun. 19, 1978, Ser. No. 916,518
Int. Cl.[2] B24B *33/02*
U.S. Cl. 51—343 16 Claims

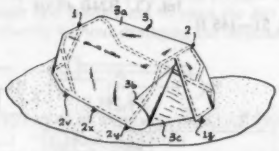


1. A honing mandrel comprising an elongated arbor having a first portion for mounting on a honing machine and a second portion axially aligned with the first portion, said second portion having a tapered outer surface over a portion of a length thereof, a tubular honing member having an inner and an outer surface, the inner surface being axially tapered for cooperating with the tapered outer surface of the second arbor portion, means forming a layer of a relatively hard abrasive substance of the outer surface of the honing member, a groove through the honing member extending from one end thereof to the other, a pilot member mounted on the second arbor portion on the opposite side of the honing member from the first arbor portion and extending from the honing member adjacent one end thereof to beyond the end of the second arbor portion, said pilot member having an axial slot therethrough extending the length thereof and a tapered inner surface to cooperate with the tapered arbor portion, and a socket formed extending into the end thereof opposite from the honing member, and means threadedly engageable with the arbor and engageable with the socket in the pilot member for adjusting the axial position of said pilot member and of the honing member on the second arbor portion, said threaded means including a threaded bore extending into the second arbor portion and a threaded member having a first portion threadedly engageable with the threaded bore and a head portion engageable with the socket in the pilot member.

4,197,681
INFLATABLE FRAME FOR TENT

Gordon B. Holcombe, Milbrae, Calif., assignor to Duane J. Baxter, Portland, Oreg.

Filed Jul. 21, 1978, Ser. No. 926,653
Int. Cl.[2] E04B *1/345*
U.S. Cl. 52—2 20 Claims

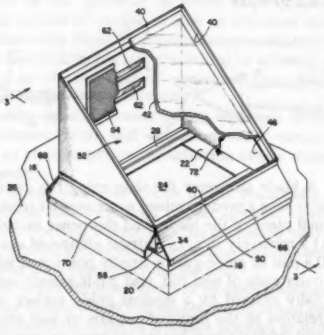


1. An inflatable frame member for a tent, comprising:
a single, unitary hollow tube, having exactly two ends and being sealed at both ends,
means for inflating the tube, and
a plurality of pleats in the tube, causing the tube when inflated to form itself into a plurality of substantially straight sections meeting at the pleat locations, the straight sections assuming predetermined relative orientations with respect to one another and defining an upwardly extending arch section, an upwardly extending brace section, and a substantially horizontal base section extending between and joining one foot of the arch section and the bottom of the brace section.

4,197,682
SKYLIGHT ESCAPE SYSTEM

Ernest Schiff, 10214 Jeanes St., Philadelphia, Pa. 19116, and Gerard J. Carmen, 3121 Derry Rd., Philadelphia, Pa. 19154

Filed Jul. 21, 1978, Ser. No. 926,756
Int. Cl.[2] E04B *7/16*
U.S. Cl. 52—72 7 Claims



1. In a skylight escape system suitable for use with a fixed curb means comprising transverse frame members and longitu-

dinal frame members defining a roof opening, the combination of

a pair of tracks mounted directly upon the frame members of the curb means, the tracks being adapted to slidably receive portions of a movable skylight means therewithin,

the tracks including raised portions, the raised portions defining respective slide spaces between the tracks and their associated transverse frame member;

a skylight means including a translucent panel slidably mounted on the tracks,

said skylight means comprising a pair of spaced slides,

each said slide respectively slidingly engaging one of said tracks and being positioned within one of said slide spaces to permit the skylight means to slide relative to the curb means,

whereby the roof opening may be exposed for use as an escape hatch in case of an emergency.

4,197,683

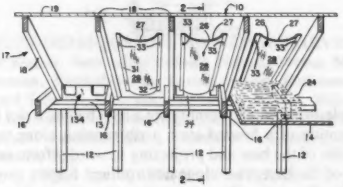
VENT AND BAFFLES

Bruce K. Ward, St. Louis Park, Minn., assignor to Diversified Insulation, Inc., Hamel, Minn.

Continuation-in-part of Ser. No. 834,322, Sep. 19, 1977, Pat. No. 4,125,971. This application Apr. 17, 1978, Ser. No. 896,890

Int. Cl.² E04B *7/02*

U.S. Cl. 52—92 **21 Claims**



1. A vent and baffle for providing an air passage between the soffit and attic of a structure having a top wall plate, roof rafters, ceiling joists, and a roof cover secured to the roof rafters comprising:

a vent having an elongated body, said body having opposite longitudinal sides and a arcuate shaped cross section forming a longitudinal groove with open ends, and outwardly directed side flanges secured to and extending along said opposite sides of the body;

a baffle having a top arcuate recess and side pockets for accommodating a transverse portion of the body and side flanges, said baffle having a bottom portion engageable with the top wall plate whereby the baffle holds the side flanges of the vent in engagement with the roof cover so that the groove of the body forms with the roof cover an air passage between the soffit and attic, the top of the baffle having inclined top surfaces engageable with the vent and roof cover.

4,197,684

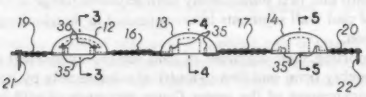
SIMULATED ROCK ASSEMBLY

Merlyn B. Johnson, 2904 Joan La., Billings, Mont. 59102

Filed Oct. 10, 1978, Ser. No. 949,960

Int. Cl.² A01G *1/08*

U.S. Cl. 52—102 **9 Claims**



1. A simulated rock assembly including a plurality of spaced apart rock-like members, connectors joining said rock-like members and end members extending from the end rock-like members; said rock-like members being molded of plastic material in a hollow configuration with an open face, the outer surface of said rock-like members having a rock pattern thereon, the opposite ends of said rock-like members having heavier sections adjacent the open face thereof, at least a pair of spaced openings in each heavier section, said openings extending generally perpendicular to said open face of said rock-like members, said connectors comprising at least two twisted metal wires, said wires diverging from each other adjacent to the ends of each connector with the end portion of each diverging wire being bent substantially perpendicular to the length of said connector for insertion thereof into the pairs of openings in the heavier end sections of said rock-like members, said end members comprising at least two twisted metal wires, the wires adjacent to one end of each end member diverging from each other with their end portions being bent substantially perpendicular to the length of said end member for insertion thereof into the pairs of openings in the heavier end sections of said rock-like members and the opposite end of each end member having stake-receiving means.

4,197,685

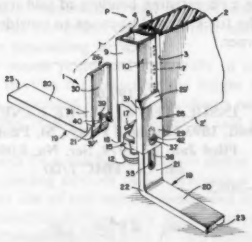
PARTITION STRUT ASSEMBLY

Gabriel Goulish, Youngstown, and C. Herbert Hage, Poland, both of Ohio, assignors to GF Business Equipment, Inc., Youngstown, Ohio

Filed Jul. 24, 1978, Ser. No. 927,160

Int. Cl.² E04H *3/00*

U.S. Cl. 52—239 **12 Claims**



1. A partition strut assembly adapted for attachment adjacent a vertical post having an outer wall and disposed above a support surface including, a strut having an upright joined to a substantially horizontal foot, said upright provided with a vertically extending slot therethrough, a housing including front, rear and side walls defining a bottom opening leading to an internal vertically disposed cavity, said housing rear wall having a hole aligned with an access opening in said housing front wall, said strut upright slidably disposed within said housing cavity with said slot aligned between said housing hole and access opening, lock means retaining said housing with its said rear wall facing said post outer wall, and said lock means including a fastener bolt having a hank passing through said slot thence extending rearwardly through said housing hole and engageable with means disposed stationary relative said vertical post to fixedly attach said housing adjacent thereto whereby, said lock means maintains said housing vertically fixed relative said post and retains at least a portion of said strut upright captively disposed within said housing cavity while allowing of vertical displacement of said strut within the limits as defined by said slot surrounding said fastener bolt shank.

4,197,686

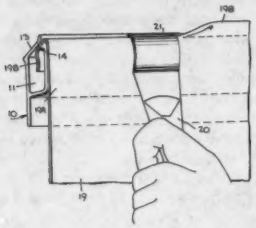
FABRIC WALL COVERING SYSTEM

Floyd M. Baslow, 201 E. 28th St., New York, N.Y. 10016

Continuation-in-part of Ser. No. 811,121, Jun. 28, 1977, Pat. No. 4,151,762. This application Dec. 5, 1978, Ser. No. 966,669

Int. Cl.[2] A47H *23/00*; B25B *27/00*

U.S. Cl. 52—273 **5 Claims**



1. A fabric wall covering arrangement making it possible to support a sheet of fabric against a wall, said sheet having excess tails going beyond its margins, the system being constituted by a frame of tracks which are attached to the wall along the perimeter of the surface to be covered, each track comprising:

a storage channel having a generally rectangular cross-section whose flat base is extended beyond the rear end of the channel to define a wall mounting flange, said front end of the channel having an inlet which lies at an acute angle relative to the base and leads into the channel, said inlet being defined by a pair of upper and lower dilatable jaws of resilient material which can be pried open by a stuffing tool to admit the excess tail of the sheet through said inlets into the channel, the jaws clamping on said tails when the tool is withdrawn, and a heel extending longitudinally along the base of said channel adjacent said lower jaw forming a rib resisting bending of said track and serving, when the track is used to cover an outside corner, to hug said corner.

4,197,687

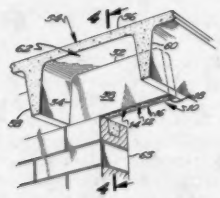
INSULATED CLOSURE PANEL

Louis J. Benoit, 1893 Highland Pkwy., St. Paul, Minn. 55116

Filed Jan. 17, 1979, Ser. No. 4,094

Int. Cl.[2] E04C *1/00*

U.S. Cl. 52—309.9 **10 Claims**



1. An insulated closure panel for closing off openings where prestressed double tee concrete construction spans are used, comprising, in combination: a core having a bottom edge, a top edge, a first side edge, a second side edge, a first face, and a second face; at least one facing member having a bottom edge, a top edge, a first side edge, a second side edge, an outside face, and an inside face; with the inside surface of the facing member being attached to one of the surfaces of the core; and with the height of the facing member defined by the distance between the top edge and the bottom edge of the facing member being less than the height of the core defined by the distance between the top edge and the bottom edge of the core and with the width of the facing member defined by the distance between the first edge and the second edge of the facing member being less than the width of the core defined by the distance defined by the first edge and the second edge of the core such that at least the top edge and side edges of the facing member are undersized from the top edge and the side edges of the core allowing the closure panel to be inserted into the opening of the construction spans such that the core can be snuggly fit in the opening while avoiding chipping of the facing member and avoiding pulling of the facing member away from the core.

4,197,688

TRIM STRIPS

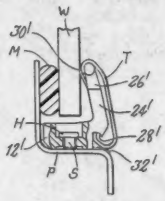
Dieter Mauer, Giessen, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

Filed Dec. 13, 1978, Ser. No. 968,993

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756248

Int. Cl.[2] E04F *15/14*

U.S. Cl. 52—718 **11 Claims**



1. A plastics trim clip comprising a base having a slot in it for the reception of a headed stud, a rib running along one side lengthwise of the base and projecting upwardly from an upper surface of the base, two elongated resilient fingers projecting upwardly from the rib and curving outwardly in opposite directions generally lengthwise of the rib, and at least one shoulder disposed to be engaged by and to retain one inturned rim of a channelled-shaped trim strip when the other inturned rim is engaged by said fingers, the slot in the base being elongated and extending in a direction inclined to that of the rib so that, in assembling the clip on a headed stud, advance of the clip relative to the stud brings the said rib progressively closer to the stud.

4,197,689

BULK STORAGE VESSELS

Harry C. DeMuth, Chicago, Ill., assignor to DeMuth Steel Products Company, Schiller Park, Ill.

Filed Jan. 13, 1978, Ser. No. 869,163

Int. Cl.[2] B21D *39/03*; E04G *21/14*

U.S. Cl. 52—745 **4 Claims**

1. A method for making an upstanding cylindrical storage vessel from a plurality of wall segments having a rectangular shaped, curved, vertically disposed side wall with flange structures along upper and lower edges comprising the steps of:

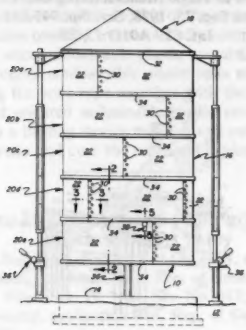
forming a first cylindrical subassembly of said wall segments by interconnecting a plurality of first wall segments in end to end relation to form a complete circular wall;

forming a second cylindrical subassembly of said wall segments by assembling a plurality of second wall segments onto said first subassembly with adjacent flange structures of said wall segments interconnected in interlocking relation;

supporting wall segments of said second cylindrical subassembly from said first cylindrical subassembly by hanging engagement of the upper flange structure of said second wall segments on the lower flange structure of said first wall segments, and interconnecting said second wall segments in end to end relation to complete said second

subassembly interconnected with said first subassembly; and

crimping together the adjacent lower and upper flanges of said first and second wall segments of said respective



subassemblies by deflecting a horizontal flange segment on said first subassembly upwardly toward a vertical position against an inside surface of a vertical flange segment on said second subassembly.

4,197,690

POSITION DETECTOR FOR ROW-CROP HARVESTER

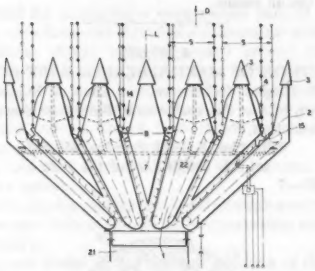
Theodor Eistert, Neustadt; Christian Noack, Guttau; Manfred Teichmann, Bischofswerda; Bernd Zumpe, Rathmannsdorf; Gerhard Schmidt, Kirschau, and Lothar Nather, Wilschdorf, all of German Democratic Rep., assignors to VEB Kombinat Fortschritt Landmaschinen, Neustadt in Sachsen, German Democratic Rep.

Filed Apr. 3, 1978, Ser. No. 892,920

Claims priority, application German Democratic Rep., Apr. 4, 1977, 198231

Int. Cl.[2] **A01D** *69/00*

U.S. Cl. 56—10.2 **10 Claims**



1. In an agricultural machine displaceable in a predetermined travel direction, having steering means, and having relative to said direction a plurality of forwardly extending arms forming forwardly open throats each adapted to receive a row of a row crop whose rows are transversely spaced apart by a distance lying between a predetermined maximum transverse spacing and a predetermined minimum transverse spacing, a position-detecting system comprising:

a plurality of feeler plates each having a pair of lateral edges and having a maximum width measured transverse to said direction between the respective edges at most equal to said minimum transverse spacing;

respective pivot means for mounting said plates on said arms of said machine with said edges exposed between said arms in the respective throats, each of said plates being transversely deflectable by engagement of crop against its said edges;

means including a link interconnecting all of said plates for joint codirectional pivoting; and

control means connected between said link and said steering means for automatic course correction to a course with said plates generally equidistant between the respective rows in the respective throats.

4,197,691

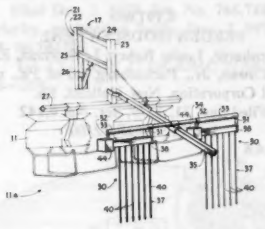
DETASSELING DEVICE DEPTH ADJUSTING CONTROL SYSTEM AND METHOD

Kenneth A. Woodruff, Clarion, Iowa, assignor to Hagie Manufacturing Co., Clarion, Iowa

Filed Sep. 25, 1978, Ser. No. 945,781

Int. Cl.[2] **A01D** *75/28*

U.S. Cl. 56—10.2 **5 Claims**



1. An automatic depth adjusting control system for a pair of mechanical corn detasseling devices adapted to remove tassels from two adjacent rows of corn plants suspended from a parallel link system mounted on a farm implement for movement of said detasseling devices in the direction of travel of said implement, said system comprising:

(a) power means connected to said parallel link system for controlling the movement thereof to raise and lower said pair of corn detasseling devices,

(b) a sensing means positioned forwardly of each of said detasseling devices for detecting the height of the corn plants in an associated row and providing a raise signal or a lower signal relative to the height of said corn plants, and

(c) circuit means for actuating said power means to raise said pair of detasseling devices upon receiving a raise signal from at least one of said sensing means and to lower said pair of detasseling devices only upon receiving a lower signal simultaneously from both of said sensing means.

4,197,692

MOWER COMPRISING CUTTER DISCS DRIVEN FROM BENEATH

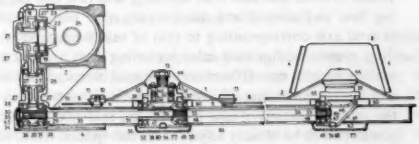
Marcel Weber, Marmoutier, France, assignor to Samibem, S.A., Marmoutier, France

Filed May 18, 1978, Ser. No. 907,327

Claims priority, application France, May 27, 1977, 77 17303

Int. Cl.[2] **A01D** *55/26*

U.S. Cl. 56—13.6 **7 Claims**



1. A mower comprising a plurality of dics having cutting elements thereon, transmission shaft means extending beneath

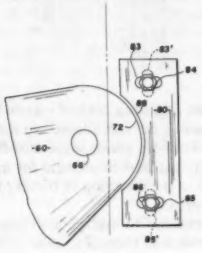
said discs for driving said discs in rotation about upright axes, a housing for each said disc, gears in said housings for driving said discs in rotation upon rotation of said transmission shaft means, said housing and gears being sealed independently of said shaft means, a support plate for supporting said housings, and means releasably connecting said housings with said support plate for attachment and removal of said housings to and from said support plate by movement perpendicular to the plane of said plate, said releasable connecting means extending exclusively perpendicular to the support plate.

4,197,693

FEEDER HOUSING SEAL

Richard P. Bernhardt, Leola; Robert L. Bowman, Ephrata, and Everett C. Cowan, Jr., Parkesburg, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Jan. 31, 1979, Ser. No. 8,142
Int. Cl.[2] A01F *12/00*
U.S. Cl. 56—14.6 **6 Claims**



1. In a crop threshing and separating machine having a mobile body, means mounted on the body to thresh and separate grain from crop material, a forward crop inlet opening with vertical opposing side edges in the body, guide means within the inlet opening to direct crop material toward the means to thresh and separate including vertical sidewalls adjacent the vertical opposing side edges of the inlet opening, means for elevating crop material from the field to the inlet opening, and means for mounting the means for elevating to the body to maintain a crop material flow relationship between the means for elevating and the inlet opening while permitting selective vertical pivotal relative movement therebetween, the means for mounting including first and second yokes affixed to the body on respective sides of the inlet opening and first and second axially aligned arms affixed to the means for elevating in respective engagement with the first and second yokes, the improvement wherein:

said means for elevating has a partially opened first end which extends into said inlet opening, said first end including first and second arcuate smooth edge plates with a central axis corresponding to that of said arms; and

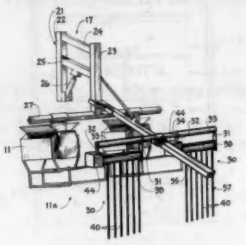
sealing means within said inlet including first and second sealing blocks one affixed to each said vertical sidewall and having an arcuate forward portion corresponding to the arcuate portion of said edge plates, said sealing blocks positioned to be closely adjacent to, but spaced from, said edge plates, whereby crop material moving towards said means to thresh and separate cannot escape between said means to elevate and said inlet opening side edges.

4,197,694

CROP HEIGHT SENSING ASSEMBLY FOR MECHANICAL DETASSELING DEVICES

Raymond W. Hagie, and Kenneth A. Woodruff, both of Clarion, Iowa, assignors to Hagie Manufacturing Co., Clarion, Iowa

Filed Sep. 25, 1978, Ser. No. 945,081
Int. Cl.[2] A01D *75/28*
U.S. Cl. 56—10.2 **3 Claims**



1. In a control system for automatically adjusting the elevation of a mechanical corn detasseling device in response to a sensing of the height of a crop plant having a tassel with adjacent upper leaf portions, wherein the device is adjustably carried on a portable frame for movement along the crop plant row, and wherein said system includes power means for raising and lowering said device and circuit means for actuating said power means in response to the height of the crop plants, the improvement of a crop sensing means comprising:

(a) a rock shaft means extended transversely of said frame,

(b) means for rotatably supporting said shaft means on said portable frame forwardly of said device for up and down adjustable movement therewith,

(c) a plurality of axially spaced dependent sensor rods on said shaft means and rockable therewith in response to contact of the lower portions of the sensor rods with the upper leaf portions of the crop plants, and

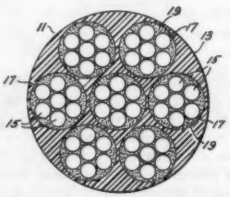
(d) signal means responsive to the rockable movement of said shaft means to produce a sensing signal for operating said circuit means.

4,197,695

METHOD OF MAKING SEALED WIRE ROPE

Charles R. Hughes, Hellertown, and Louis A. Stanzione, Williamsport, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 8, 1977, Ser. No. 849,568
Int. Cl.[2] D07B *7/14, 1/06, 1/16*
U.S. Cl. 57—7 **6 Claims**



1. A method of making a sealed wire rope having a smooth exterior surface and having each strand impregnated with a plastic foam material and substantially separated from adjacent strands by a dense non-foamed plastic material of substantially the same composition as the plastic foam material comprising:

(a) impregnating an uncured foamable plastic resin material individually into a plurality of wire strands,

(b) closing the uncured foamable plastic resin containing wire strands together into a wire rope in a closing die while injecting an uncured nonfoamable plastic resin material having substantially the same composition as the uncured foamable plastic material into the closing die at a point prior to complete closing of the strands together and in sufficient quantity to substantially completely encapsulate the uncured foamable plastic containing wire strands with uncured nonfoamable plastic resin material, and

(c) passing the wire rope together with the uncured foamable and uncured unfoamable plastic resin compositions through a heating device to foam and cure the foamable plastic resin and cure the unfoamable plastic resin.

4,197,696

METHOD AND APPARATUS FOR PRODUCING A WRAP-AROUND YARN

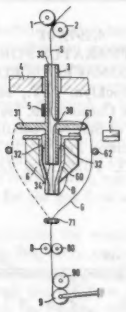
Erich Bock, Ingolstadt, Fed. Rep. of Germany, assignor to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Jun. 19, 1978, Ser. No. 917,111

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 2729060

Int. Cl.[2] D02G *3/36*; D01H *7/88*

U.S. Cl. 57—18 **11 Claims**



1. Method for producing a wrap-around yarn of the type having an untwisted core thread of discontinuous textile fibers with a binder thread helically wound around the same, wherein the binder thread supplied by a bobbin and the core thread supplied by a pair of supply rollers are passed through a hollow spindle, the core thread is given a false twist and the wrap-around yarn is drawn from the hollow spindle and wound up, wherein the improvement comprises:

passing said core thread through a first opening into said hollow spindle;

separately passing said binder thread through a second opening in said hollow spindle while maintaining said bobbin stationary;

passing said binder thread through a section of the hollow spindle and to a core thread deflection point at which point the false twist is removed from said core thread; and

wrapping said binder thread around said core thread in the area of said deflection point.

4. Apparatus for producing a wrap-around yarn of the type which includes a pair of supply rollers for supplying a core thread, a pair of take-off rollers for winding up the wrap-around yarn, a driven hollow spindle arranged between said rollers, and a bobbin wound with a binder thread arranged coaxially on said hollow spindle, wherein the improvement comprises:

first and second openings provided adjacent respective ends of said hollow spindle;

a spindle disk means affixably carried by said hollow spindle;

an opening provided in a wall of said hollow spindle adjacent said spindle disk;

means for maintaining said bobbin stationary relative to said driven hollow spindle;

means for passing said core thread through one of said openings in said hollow spindle;

means for separately passing said binder thread through one of the other of said openings in said hollow spindle while maintaining said bobbin stationary relative to said driven hollow spindle; and

means for wrapping said binder thread around said core thread in the area of said spindle disk and removing said core thread and said binder thread from said hollow spindle through said remaining opening.

4,197,697

ALARM WATCH

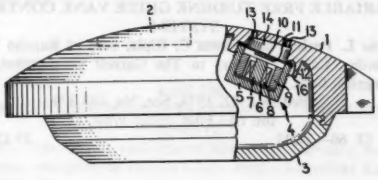
Shigeo Mori; Fumikazu Murakami; Yoshiaki Hara; Ichiro Horikoshi, and Souya Takahashi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Dec. 2, 1976, Ser. No. 746,718

Claims priority, application Japan, Dec. 2, 1975, 50-144201; Dec. 2, 1975, 50-144205

Int. Cl.[2] G04B *37/08*; G04C *21/00*

U.S. Cl. 368—315 **7 Claims**



1. In an alarm watch having a watch case comprised of a case body and a cover member connected to said case body: an electro-acoustic transducer mounted on said watch case and including a vibrating plate having opposite surfaces mounted to undergo vibration to generate an audible alarm sound; means defining a sound releasing cavity in said watch case on one side of said vibrating plate with one of the opposite surfaces of said vibrating plate facing said cavity; means defining sound releasing holes extending through said watch case into said cavity at locations opposite said one surface of said vibrating plate for releasing the audible alarm sound from said cavity to the exterior of said watch case; and means including a layer of water-repellant material on the surfaces of said watch case which define said sound releasing holes and covering said one surface of said vibrating plate for repelling therefrom any water which enters said cavity through said sound releasing holes thereby maintaining the sound quality of the audible alarm sound.

4,197,698

FLUID-TIGHT WATCH CASE

Hansjörg Finger, Standweg 6, 2543 Lengnau (Berne), Switzerland

Filed Dec. 18, 1978, Ser. No. 970,440

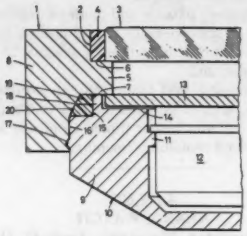
Claims priority, application Switzerland, Dec. 30, 1977, 16335/77

Int. Cl.[2] G04B *37/08*, *39/00*

U.S. Cl. 368—291 **6 Claims**

1. A fluid-tight watch case comprising a combined caseband-and-bezel provided with an inner flange for positioning the dial, a domed back provided with a sidewall on which said caseband-and-bezel is fitted, and an annular gasket disposed between said caseband-and-bezel and said back at least at the level of said dial, wherein said caseband-and-bezel includes an inclined annular inner surface and said sidewall includes a peripheral outer undercut having sides formed by an annular

shoulder and by the side face of a rib pressing against said flange, said gasket being compressed radially and obliquely by



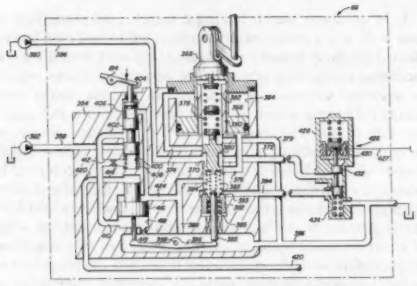
said inclined surface and pressing against said sides of said undercut.

4,197,699

FREE TURBINE TYPE GAS TURBINE ENGINE WITH VARIABLE FREE TURBINE GUIDE VANE CONTROL SYSTEM

Warde L. Parker, and James C. Riple, both of Rancho Palos Verdes, Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 22, 1977, Ser. No. 863,370
Int. Cl.[2] F02C *9/02, 9/04*
U.S. Cl. 60—39.03 **33 Claims**



1. A method of altering the incidence of motive gas flow onto a power turbine section of a free turbine type gas turbine engine, comprising the steps of:

mechanically sensing power turbine section speed;

mechanically sensing the incidence of gas flow onto the power turbine section;

generating a mechanical input signal indicative of a desired speed for the power turbine section;

comparing the sensed speed with the desired speed input signal and generating a mechanical speed error signal indicative of the difference between the sensed and desires speeds;

comparing the sensed incidence of gas flow with the speed error signal and generating a mechanical output signal indicative of the difference between the sensed incidence and the speed error signal; and

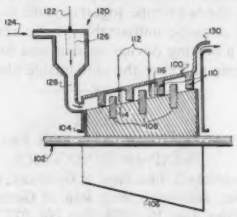
adjusting the incidence of gas flow onto the power turbine section in relation to said mechanical output signal in a manner minimizing said speed error signal.

4,197,700

GAS TURBINE POWER SYSTEM WITH FUEL INJECTION AND COMBUSTION CATALYST

Charles E. Jahnig, 5 Auldwood La., Rumson, N.J. 07760

Filed Oct. 13, 1976, Ser. No. 732,051
Int. Cl.[2] F02M *27/02*; F02C *3/16*
U.S. Cl. 60—39.04 **13 Claims**



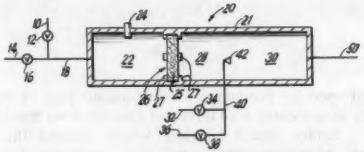
1. In a method of producing power in a gas turbine, the improvement which comprises injecting and combusting a fuel with air in the presence of a combustion catalyst in said gas turbine.

4,197,701

METHOD AND APPARATUS FOR COMBUSTING CARBONACEOUS FUEL

Asmund A. Boyum, Brooklyn, N.Y., assignor to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Continuation-in-part of Ser. No. 645,017, Dec. 29, 1975, abandoned. This application Feb. 17, 1978, Ser. No. 878,839
Int. Cl.[2] F02C *3/20, 7/26*
U.S. Cl. 60—39.06 **10 Claims**



1. The method of combusting carbonaceous fuel comprising the steps of:

providing a first mixture of carbonaceous fuel and air;

passing said first mixture to a combustion zone, containing a catalyst occupying a major portion of the flow cross section of said combustion zone, for combustion of at least a portion of said first mixture under essentially adiabatic conditions in the presence of said catalyst, operating at a temperature substantially above the instantaneous auto-ignition temperature of said first mixture but not exceeding about 3000° F., to produce a first gaseous effluent;

providing a carbonaceous fuel-containing component differing from said first mixture, the fuel in said fuel-containing component having an adiabatic flame temperature of at least about 3300° F. when burned with a stoichiometric amount of air; and

mixing said first effluent and said fuel-containing component to form a second mixture having a temperature upon mixing at least sufficient to sustain homogeneous combustion of said second mixture and having an adiabatic flame temperature in the range from about 2500° F. to about 3700° F. and substantially above said operating temperature of the catalyst, thereby homogeneously combusting said mixture to produce a second gaseous effluent.

4,197,702

ROTOR SUPPORT STRUCTURE FOR A GAS TURBINE ENGINE

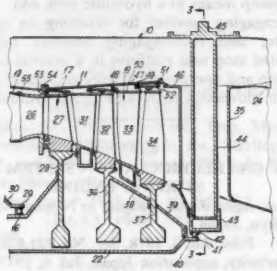
John M. Robertson, Derby, England, assignor to Rolls-Royce Limited, London, England

Filed May 18, 1978, Ser. No. 907,317

Claims priority, application United Kingdom, May 26, 1977, 22195/77

Int. Cl.[2] F02K 3/02; F01D 25/16

U.S. Cl. 60—262 7 Claims



1. A by-pass gas turbine engine having a core engine with compressor means, combustion means, and turbine means in flow series, said gas turbine engine comprising:

a fixed outer casing and a concentrically arranged fixed inner casing means defining a by-pass passage therebetween, said inner casing means also defining outer bounds for the gas flow annulus through the core engine;

a rotor carried within said inner casing means and supporting a plurality of rotor blades, said rotor defining a portion of inner bounds for the gas flow annulus through the core engine;

a rotor support structure for rotatably carrying said rotor operatively from said fixed outer casing, said rotor support structure comprising two pairs of supporting struts extending through the gas flow annulus of said core engine and through the by-pass passage, a pair of diametrically opposed mountings, each operatively carried by said outer casing and each being connected to one of said pairs of supporting struts, an annular structurally strong ring connected to said two pairs of supporting struts with each supporting strut of each of said pairs extending substantially tangentially from said ring, and a rolling element bearing supporting said rotor and positioned between said ring and said rotor;

stator blades associated with said rotor;

and stator support structure forming part of said inner casing means and fixedly secured to and supported by said ring, said support structure carrying said stator blades, and said stator support structure including streamlined casings encasing each support strut of each of said pairs of support struts to protect the support struts from gas flow in the gas flow annulus of the core engine.

4,197,703

EXHAUST SYSTEM FOR STRADDLE CARRIER ENGINES

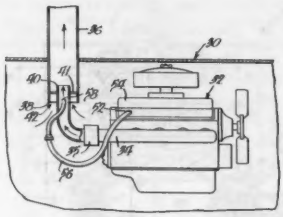
William K. Holmes, Schofield, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Apr. 24, 1978, Ser. No. 899,518

Int. Cl.[2] F01N 5/04; B60P 3/00

U.S. Cl. 60—319 4 Claims

1. In combination with a straddle carrier having a generally inverted U-shaped frame including vertical legs and a connecting portion interconnecting upper ends of said legs to define an open cargo bay with an engine adjacent the lower end of at least one of said legs, said engine having an exhaust line having a vertical exhaust outlet and a crankcase with a vent, and a vertical pipe having one end surrounding said vertical exhaust outlet and defining an annular air inlet around said vertical exhaust outlet with the opposite end of said pipe located above said connecting portion of said frame, the improvement of tube means having one end connected to said crankcase vent and an



opposite open end located vertically within said exhaust line adjacent said vertical exhaust outlet so that air flow is developed through said annular air inlet producing a negative pressure at said opposite open end of said tube means so that combustible materials are drawn from said crankcase into said exhaust line.

4,197,704

EXHAUST MANIFOLD FOR INTERNAL COMBUSTION ENGINE

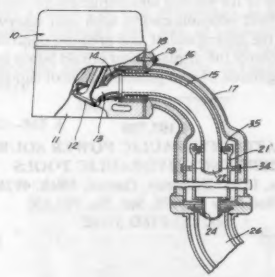
Tasuku Date, Tokyo, and Takeru Mizoguchi, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 804,574, Jun. 8, 1977, abandoned. This application Apr. 27, 1979, Ser. No. 33,865

Claims priority, application Japan, Jun. 11, 1976, 5167730; Jun. 11, 1976, 51-67731

Int. Cl.[2] F01N 7/00, 3/10

U.S. Cl. 60—322 3 Claims



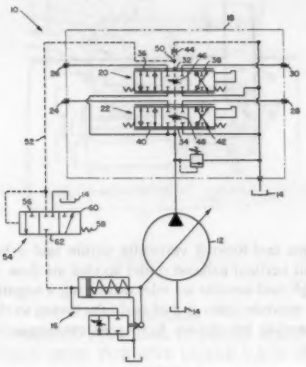
1. For use with an internal combustion piston engine having an even number of cylinders and a predetermined firing order, the improvement comprising, in combination: an exhaust manifold assembly having one exhaust tube for each cylinder, respectively, walls forming an exhaust port for each cylinder, each exhaust tube projecting into one of said exhaust ports, respectively, means supporting and sealing each exhaust tube within its exhaust port, a plurality of collection chambers, each exhaust tube being slidably received within one of said collection chambers, respectively, each collection chamber being connected to a plurality of exhaust tubes so that the exhaust timing spacing is the same in each collection chamber, and a discharge pipe leading from each collection chamber.

4,197,705

HYDRAULIC CONTROL SYSTEM

Robert C. Westveer, Kalamazoo, Mich., assignor to General Signal Corporation, Stamford, Conn.

Filed May 30, 1978, Ser. No. 910,726
Int. Cl.[2] F16H *39/46*
U.S. Cl. 60—445 **22 Claims**



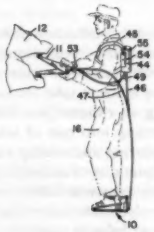
1. A hydraulic control system comprising:
a fluid reservoir;
a variable displacement pump having a fluid input in fluid communication with said reservoir and having a fluid output;
a fluid actuated displacement control mechanism for controlling the displacement of said pump;
a control valve in fluid communication with the fluid output of said variable displacement pump and with said reservoir and being adapted to control the flow of fluid to a fluid actuated device, said control valve including means for developing a control pressure signal; and
a sensor valve in fluid communication with said control pressure signal, said displacement control mechanism, and said reservoir for placing said control pressure signal in fluid communication with said displacement control mechanism or for placing said displacement control mechanism in fluid communication with said reservoir in response to the magnitude of said pressure control signal to thereby control the displacement of said pump in response to the magnitude of said pressure control signal.

4,197,706

FOOT-OPERATED HYDRAULIC POWER SOURCE FOR EMERGENCY HYDRAULIC TOOLS

David R. Blake, 11200 Killarney, Onsted, Mich. 49265

Filed May 1, 1978, Ser. No. 901,430
Int. Cl.[2] F16D *31/02*
U.S. Cl. 60—477 **16 Claims**



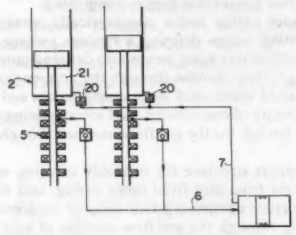
1. A portable, free-standing foot-operated hydraulic power source for supplying hydraulic fluid pressure to hydraulic tools, said hydraulic power source comprising:
a substantially flat support platform adapted to rest freely on any relatively flat surface;
pump means fixedly carried by said platform, said pump means including a hydraulic piston in sealing engagement with a hydraulic cylinder, said hydraulic cylinder adapted to contain hydraulic fluid, said hydraulic piston adapted to create hydraulic pressure by movement of said hydraulic piston against said hydraulic fluid;
fluid conduit means to deliver the hydraulic pressure from said pump means to a hydraulic tool; and
a foot-engaging member for retaining an operator's foot therein, said foot-engaging member being pivotally mounted atop said platform in a general overlying relationship and operatively connected to said hydraulic piston for movement thereof to create hydraulic pressure.

4,197,707

LEAKAGE GAS RECIRCULATION SYSTEM FOR USE IN STIRLING ENGINE

Kenji Asano, Ageo, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Jul. 3, 1978, Ser. No. 921,678
Claims priority, application Japan, Jul. 6, 1977, 52-80545
Int. Cl.[2] F02G *1/06*
U.S. Cl. 60—517 **4 Claims**



1. A leakage gas return device for use in a Stirling engine having a block seal portion to form a seal between a cylinder of the Stirling engine and a piston rod, wherein the improvement is characterized in that said return device comprises:
(a) a pumping cylinder and a piston disposed in said pumping cylinder and having at least one seal means for dividing said pumping cylinder into first and second chambers, said piston being slidable between a bottom dead center position at which the volume of said first chamber is a maximum and a top dead center position at which the volume of said second chamber is a maximum;
(b) a leakage gas intake passage for providing leakage gas from said block seal portion into said first chamber through a first one way valve;
(c) a leakage gas discharge passage for providing the leakage gas in said first chamber into a Stirling engine cylinder through a second one way valve;
(d) a fluid intake and discharge passage connected to said second chamber and selectively communicating with a low pressure fluid source and a high pressure fluid source;
(e) control means for providing communication between said fluid intake and discharge passage and said low pressure fluid source in response to a first control signal and providing communication between said fluid intake and discharge passage and said high pressure fluid source in response to a second control signal; and
(f) switch means switchable between a first position when said piston reaches top dead center and a second position when said piston reaches bottom dead center, said switch means generating said first and second control signals when in its first and second positions, respectively, so that

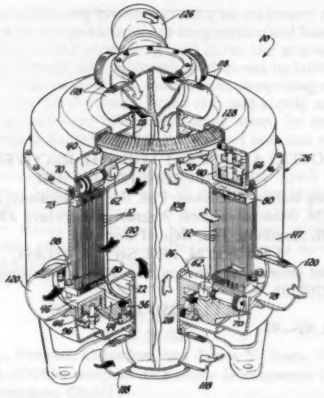
leakage gas from said leakage gas intake passage forces said piston to its bottom dead center position at which time high pressure fluid introduced into said second chamber forces the leakage gas out of said first chamber into said Stirling engine cylinder until said piston reaches top dead center.

4,197,708

THERMAL ENERGY SCAVENGER (ALTERNATING STRESS LIMITERS)

Harold W. Milton, Jr., 3318 Tothill Rd., Troy, Mich. 48084; Peter A. Hochstein, 14020 15 Mile Rd., Sterling Heights, Mich. 48077, and William L. Pringle, 999 Lake Shore Rd., Grosse Pointe Shores, Mich. 48236

Filed Jun. 9, 1978, Ser. No. 914,012
Int. Cl.² F03G 7/06
U.S. Cl. 60—527 **11 Claims**



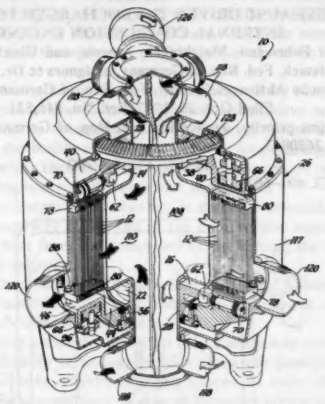
1. A thermal energy scavenger assembly comprising: a plurality of temperature-sensitive elements made of material which exhibits shape memory due to thermoelastic, martensitic phase transformation; said elements being elongated with first and second ends; reaction means reacting with said elements for applying a stress to said elements to strain said elements during a first phase and for responding to the unstraining of said elements during a second phase; carriage means supporting said first and second ends of said elements for allowing said elements to be placed in tension while reacting with said reaction means; said carriage means supporting said elements in parallel relationship to one another; support means supporting said reaction means and said carriage means for allowing relative movement between said reaction means and said elements supported by said carriage means to extract energy as said elements unstrain and shorten in length during said second phase; stress limiting means disposed between only one end of each of said elements and said carriage means for limiting the strain of said elements during said phases as stress is transmitted between said elements and said reaction means through said stress limiting means; said stress limiting means being disposed only at said first ends of a number of said elements and being disposed only at the opposite second ends of the remainder of said elements thereby compacting the area in which the elements are disposed.

4,197,709

THERMAL ENERGY SCAVENGER (STRESS LIMITER)

Peter A. Hochstein, 14020 Fifteen Mile Rd., Sterling Heights, Mich. 48077

Filed Jun. 9, 1978, Ser. No. 914,013
Int. Cl.² F03G 7/06
U.S. Cl. 60—527 **13 Claims**



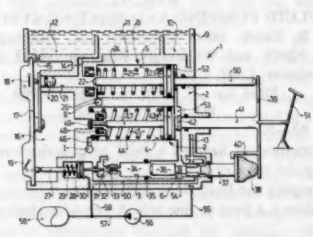
1. A thermal energy scavenger assembly comprising: at least one temperature-sensitive element made of material which exhibits shape memory due to thermoelastic, martensitic phase transformation; reaction means reacting with said element for applying a stress to said element to strain said element during a first phase and for responding to the unstraining of said element during a second phase; and stress limiting means for limiting the strain of said element during said second phase whereby the strain upon the element may be greater during the first phase than during the second phase.

4,197,710

HYDRAULIC BRAKE BOOSTER

Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 3, 1978, Ser. No. 948,264
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750491
Int. Cl.² B60T 13/00
U.S. Cl. 60—547 A **13 Claims**



1. A hydraulic brake booster for a vehicle brake apparatus having a pressurizing apparatus with a pump and a pressurized reservoir and further including a reservoir switchover piston adapted to be subjected to the reservoir pressure and a control valve, said control valve being in proximity to a booster cylinder and arranged to control both a connection of the pressurizing apparatus with said booster cylinder and a connection of said booster cylinder with a relief means, further wherein said

control valve includes a push rod that is associated with a stop means which cooperates with said control valve and thereby limits the stroke of said push rod and is automatically disengageable therefrom when the pressure supply fails.

4,197,711

EXHAUST DRIVEN TURBOCHARGER FOR AN INTERNAL COMBUSTION ENGINE

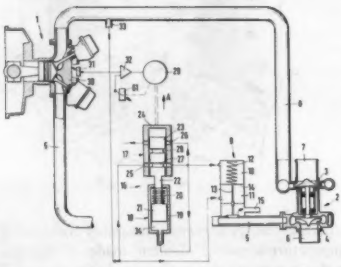
Ernest Fuhrmann, Maichingen, Austria, and Ulrich Lehmann, Weissach, Fed. Rep. of Germany, assignors to Dr. Ing. h. c. F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 26, 1977, Ser. No. 845,531

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2650033

Int. Cl.[2] F02B *37/00*

U.S. Cl. 60—602 **10 Claims**



1. Turbocharging apparatus including:
an internal combustion engine,
an exhaust gas driven turbocharger having an exhaust turbine and a charging air blower,
an exhaust gas line leading to said exhaust turbine,
a charging air line leading from said charging air blower to supply charging air to said engine,
a bypass line which bypasses said exhaust turbine,
control device means for controlling the proportion of exhaust gases conducted through said exhaust gas line and said bypass line,
and regulating device means for regulating the control device means as a function of both the pressure in said charging air line and the temperature of an engine being supplied with charging air by said charging air line.

4,197,712

FLUID PUMPING AND HEATING SYSTEM

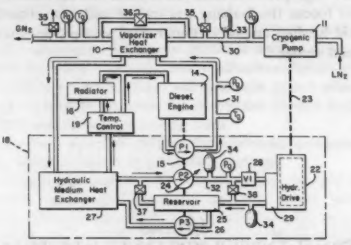
Eugene B. Zwick, 16841 Edgewater La., Huntington Beach, Calif. 92649, and William D. Brigham, 14361 Suffolk St., Westminster, Calif. 92683

Filed Apr. 21, 1978, Ser. No. 898,999

Int. Cl.[2] F17C *7/02*

U.S. Cl. 62—53 **18 Claims**

1. A method of heating a fluid to a desired temperature including the steps of:
(a) pumping the fluid along a flow path;
(b) utilizing a heat engine which provides shaft power and heat;
(c) utilizing a part of the shaft power of said engine to effect said pumping;
(d) providing a back pressure to increase the pumping load on the engine so that the engine operates at a greater power level than would be necessary to effect the pumping in the absence of such back pressure to thereby provide increased heat from said engine; and
(e) effecting a heat exchange between the engine heat and said fluid passing along said flow path to thereby heat said fluid, the amount of heat provided being directly proportional to the flow rate of said fluid



whereby separate burners, direct fired units, boiler systems and the like are not required to heat said fluid.

4,197,713

PROCESS AND PLANT FOR THE RECOVERY OF WATER FROM HUMID AIR

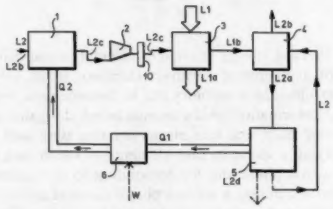
Wolfgang Bulang, Eichenau, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Jan. 24, 1978, Ser. No. 871,841

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1977, 2702701

Int. Cl.[2] F25D *17/06, 23/00*

U.S. Cl. 62—94 **9 Claims**

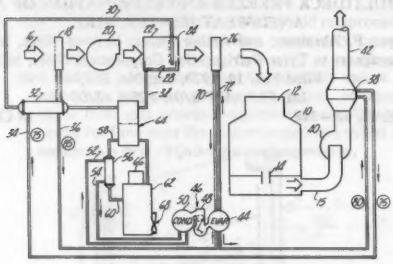


1. A process for recovering water from humid air, comprising the steps of:
(a) contacting the humid air with an adsorbing agent to withdraw moisture from the air and to adsorb the same,
(b) contacting the moistened adsorbing agent with dry air to recover the moisture from the adsorbing agent and to adsorb said moisture,
(c) conducting the air containing moisture removed from the adsorbing agent to a condenser and extracting heat from the moist air so that the water vapor contained therein is condensed,
(d) collecting the water formed by condensation of the water vapor, and
(e) transferring heat extracted from the moist air to the dry air for heating the dry air before the dry air is contacted with the adsorbing agent.

4,197,714
SYSTEM AND METHOD FOR LIQUID ABSORPTION AIR CONDITIONING

Norman F. Bradshaw, Surrey, England, assignor to Schweitzer Industrial Corporation, Madison Heights, Mich.

Continuation-in-part of Ser. No. 912,322, Jun. 5, 1978, abandoned. This application Dec. 4, 1978, Ser. No. 966,010
Int. Cl.[2] F25D *17/06, 23/00*
U.S. Cl. 62—94 **18 Claims**



1. An air conditioning system including an enclosure; means for supplying air at a predetermined temperature and humidity to said enclosure, and exhausting said air to the atmosphere after passing through said enclosure, said means including:

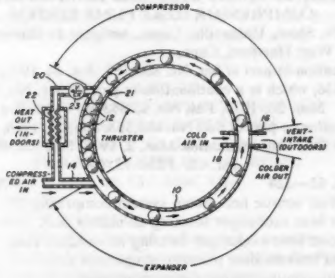
liquid absorption-dehumidification means comprising means for spraying an absorption liquid into said supply air and collecting said liquid absorption liquid; means for recirculating said collected liquid to be sprayed into said supply air;

means for cooling said circulated absorption liquid to remove the heat released in said solution by absorption liquid by said supply air, said means including heat exchanger means transferring heat from said absorption liquid into said exhaust air after said exhaust air is exhausted from said enclosure.

4,197,715
HEAT PUMP

Sherwood L. Fawcett, Columbus, and James N. Anno, Cincinnati, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 812,559, Jul. 5, 1977, Pat. No. 4,117,696. This application Jun. 23, 1978, Ser. No. 918,234
The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.
Int. Cl.[2] F25B *1/00, 13/00*
U.S. Cl. 62—115 **34 Claims**



1. Heat pump apparatus comprising:

(a) a continuous loop passageway containing a plurality of bodies to move along the passageway,

(b) means for generating a force by the expansion of a fluid in an expander region of said passageway to thereby accelerate successive ones of the bodies in one direction around the passageway,

(c) a compression region in the passageway beyond the expander region wherein fluid is compressed between successive ones of the propelled bodies,

(d) port means in the passageway between the end of the expander region and the beginning of the compression region to permit the venting of fluid which has been expanded and the entrance of fluid which is to be compressed,

(e) a thruster region in the passageway beyond the compression region wherein a force is applied to successive ones of the bodies to counterbalance the external forces acting against the bodies as they traverse the loop passageway and to return them from the end of the compression region to the beginning of the expander region, and

(f) heat exchanger means having its entrance connected to the passageway at the end of the compression region to extract heat from the compressed fluid leaving the compression region.

20. A method for increasing the heat content of a fluid and thereafter transferring the heat content to an ambient atmosphere, which comprises the steps of:

(a) providing a closed-continuous loop passageway containing a plurality of bodies to move along the passageway,

(b) generating a force between successive ones of said bodies by expansion of fluid in an expander region of said passageway to increase the kinetic energy of the bodies and thereby propel successive ones of the bodies in one direction around the passageway,

(c) exiting said fluid after expansion thereof from the interior of said passageway at a reduced temperature,

(d) introducing a fluid at a temperature higher than said reduced temperature into the interior of said passageway and thereafter compressing said introduced fluid between successive ones of the bodies propelled by expansion, and

(e) thereafter passing the compressed fluid through heat exchanger means connected to the passageway after compression of said fluid for extracting heat from the fluid thus compressed.

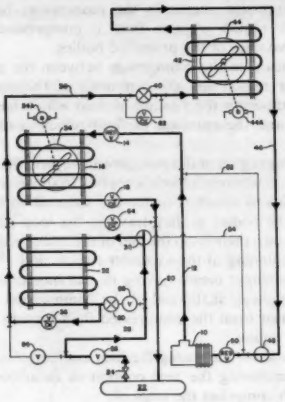
4,197,716
REFRIGERATION SYSTEM WITH AUXILIARY HEAT EXCHANGER FOR SUPPLYING HEAT DURING DEFROST CYCLE AND FOR SUBCOOLING THE REFRIGERANT DURING A REFRIGERATION CYCLE

Otto J. Nussbaum, Huntsville, Ala., assignor to Halstead Industries, Inc., Scottsboro, Ala.

Continuation-in-part of Ser. No. 833,198, Sep. 14, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,013
Int. Cl.[2] F25B *41/00, 47/00*
U.S. Cl. 62—196 B **10 Claims**

1. In a reversible refrigeration system of the type including a compressor having discharge and suction sides, a condenser, a liquid refrigerant receiver, an auxiliary heat exchanger, an expansion device and an evaporator interconnected in a closed circuit to provide a normal refrigeration cycle wherein refrigerant flows from the discharge side of said compressor, through the condenser to the receiver, then through the auxiliary heat exchanger and through the expansion device to the evaporator and back to the suction side of the compressor, and wherein flow of refrigerant through the auxiliary heat exchanger is optional during the normal refrigeration cycle; the improvement of apparatus including valve means operative at the termination of a refrigeration cycle and prior to initiation of a defrost cycle for connecting said receiver through said auxiliary heat exchanger to the suction side of said compressor while connecting the discharge side of the compressor to said evaporator with the flow of refrigerant from the evaporator flowing back to the receiver, and apparatus including valve means operative during a defrost cycle for connecting the

discharge side of the compressor to one side of said evaporator while connecting the other side of the evaporator through said



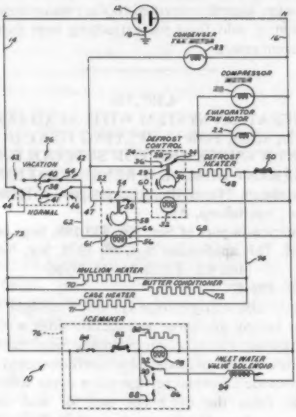
auxiliary heat exchanger to the suction side of said compressor with the flow of refrigerant from the receiver into the refrigeration system being blocked.

4,197,717

HOUSEHOLD REFRIGERATOR INCLUDING A VACATION SWITCH

Frank A. Schumacher, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 23, 1977, Ser. No. 863,983
Int. Cl.[2] F25B *49/00*
U.S. Cl. 62—213 **13 Claims**



12. In an automatically defrosted refrigerator including a refrigerant compressor, a refrigeration system high side having a compressor exhaust line and a refrigerant condenser, and timing means for determining the interval between successive defrosting operations, an arrangement for extending the interval between successive defrosting operations, which arrangement comprises:

switching means for selecting either normal or extended intervals between successive defrosting operations;

a temperature responsive switch responsive to the temperature of a point on said refrigeration system high side; and

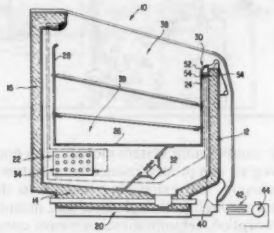
means responsive to said switching means for enabling said timing means continuously during operation of said compressor when said switching means is selecting normal defrost intervals, and for disabling said timer means when the temperature sensed by said temperature responsive switch exceeds a predetermined value during each operation of said compressor when said switching means is selecting extending defrost intervals.

4,197,718

MULTIDECK FREEZER AND ELIMINATION OF ALL ANTISWEAT HEATER WIRE

Fayez F. Abraham, and Arthur Perez, both of Niles, Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Filed Feb. 10, 1978, Ser. No. 876,748
Int. Cl.[2] A47F *3/04*; F25B *47/00*
U.S. Cl. 62—248 **13 Claims**



1. A refrigerated case for refrigerated products having a wall structure providing an unobstructed opening for access to the interior of said case comprising:

a duct means formed by said wall structure for circulation of refrigerating air across said access opening, said structure including an air return aperture at one side of the opening and a discharge opening at the other side of said opening for supplying air in an air band which moves across said opening and is received by said return aperture;

a refrigeration system including conduit means for carrying refrigerant used in said system;

said conduit means being maintained at a temperature greater than that of the air band; at least a portion of said conduit means being located within said wall structure adjacent said discharge opening in heat transfer relationship therewith through said wall structure for limiting frost accumulation adjacent said opening sufficient to avoid interference with the flow of said air band.

4,197,719

TRI-LEVEL MULTI-CYLINDER RECIPROCATING COMPRESSOR HEAT PUMP SYSTEM

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Continuation-in-part of Ser. No. 806,407, Jun. 14, 1977, Pat. No. 4,148,436, which is a continuation-in-part of Ser. No. 782,675, Mar. 30, 1977, Pat. No. 4,086,072, which is a continuation-in-part of Ser. No. 653,568, Jan. 29, 1976, Pat. No. 4,058,988. This application Mar. 2, 1978, Ser. No. 882,729
Int. Cl.[2] F25B *13/00*
U.S. Cl. 62—324 **29 Claims**

1. An air source heat pump system comprising:

a first heat exchanger forming an indoor coil,

a second heat exchanger forming an outdoor coil,

a third intermediate pressure evaporator coil,

a multi-cylinder reciprocating compressor,

conduit means carrying refrigerant and connecting said coils and said compressor in a closed fluid circuit,

said conduit means including a reversing valve for connecting said indoor and outdoor coils in a closed series loop, with said reversing valve functioning to cause said indoor

and outdoor coils to operate alternately as a low pressure system evaporator or a high pressure system condenser, and

means for selectively supplying refrigerant to said intermediate pressure evaporator coil for vaporization therein,

the improvement wherein:

said multi-cylinder reciprocating compressor comprises a hermetic compressor unit including:

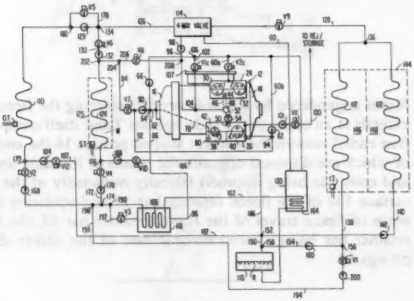
a hermetic casing,

at least three cylinders within said casing,

pistons within said cylinders,

a motor within said casing for driving said reciprocating compressor pistons and being operatively coupled thereto,

said conduit means including first conduit means for supplying low pressure suction return refrigerant vapor from said system evaporator to said hermetic casing for flow over the motor to cool said motor and thence to a first cylinder for recompression,



means for supplying intermediate pressure refrigerant vapor from said intermediate pressure evaporator coil to said first conduit means for flow to said first cylinder,

means for selectively cutting off said first cylinder to suction return refrigerant vapor from said system evaporator, and

means for selectively directing low pressure, suction return refrigerant vapor from said system evaporator to all of said at least three cylinders, said second and third cylinders only, and said third cylinder only, such that said compressor may be operated at partial load conditions with low pressure refrigerant vapor compressed by said first and second cylinders and under increased load conditions with said low pressure, suction return refrigerant vapor compressed by said second and third cylinders and said intermediate pressure refrigerant vapor from said intermediate pressure evaporator coil compressed by said first cylinder with said third cylinder functioning in a capacity control mode.

4,197,720

TWO-PART BAND STRUCTURE WITH INTERENGAGEABLE ENDS

James Nani, 18242 John R. St., Detroit, Mich. 48203

Filed Mar. 16, 1978, Ser. No. 887,441

Int. Cl.[2] A44C *5/12*

U.S. Cl. 63—11 **14 Claims**

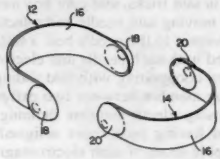
1. A band or bracelet structure comprising

a pair of integrally formed, unitary band members of material having good tensile strength, relative flexibility, and good to excellent maintenance of form,

each said band member comprising

a web or body portion intermediate one or more end portions extending longitudinally from each end thereof, each said end portion of each said band member having a fitting in the form of a laterally outwardly extending or directed convexo-concave protrusion in partially spherical or truncated spherical form, integrally formed of said end portion adjacent the distal end thereof,

each said fitting on one said band member being readily interengageable with and separable from a complementary fitting on and adjacent the distal end of each said



end portion of the other said band member, the fittings at the distal ends of said one band member seating within said complementary fittings at the distal ends of said end portions of the other said band member, said web or body portion including means for flexing said members to seat said fittings into and maintain them in an interengaged relation.

4,197,721

METHOD FOR FORMING OF STITCHES AND KNITTING MACHINE FOR CARRYING OUT THE METHOD

Ulrich Hofmann, Goethestr. 99, 7470 Ebingen, Fed. Rep. of Germany, and Lothar Thomma, Burenweg 281, Hochwald (Kanton Solothurn), Switzerland

Filed Oct. 19, 1977, Ser. No. 843,658

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1976, 2647185

Int. Cl.[2] D04B *9/06, 35/02*

U.S. Cl. 66—19 **17 Claims**

4. A stitch forming apparatus for successively forming a plurality of interlocked stitches from at least one continuous thread comprising:

a plurality of stitch forming needles reciprocable in a needle bed,

a clamping member associated with each of said needles and engageable with and moveable toward and away from a surface portion of said needle for releasably clamping formed loops of thread between clamping members and said first portion and around said needles while succesing loops of thread are being formed.

4,197,722

KNITTING MACHINE

Jackie Cote-Petit, Pontarlier, France, and Fritz Kohler, Couvet, Switzerland, assignors to Edouard Dubied & Cie. Societe Anonyme, Couvet, Switzerland

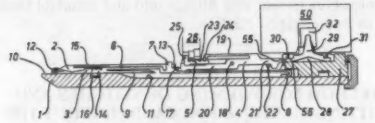
Filed Mar. 5, 1979, Ser. No. 17,237

Int. Cl.[2] D04B *7/00, 15/60*

U.S. Cl. 66—75.2 **7 Claims**

1. A flat knitting machine with needle preselection, electro-

magnetically controlled needles and stitch transfer, comprising a pair of needle beds arranged in an inverted V shaped configuration and having tricks formed therein; needles and selectors having butts thereon received in said tricks, said butts being adapted to be positioned level with or above their associated needle bed and said selector butts being adapted to be positioned at different levels with respect to their associated needle bed; a knitting carriage including cam box means for moving said needles in said tricks, said cam box means including vertical cams for moving said needle and selector butts to different levels with respect to the needle bed, a sliding member on said bed associated with each needle and electromagnetic selection control means cooperating with said sliding member for moving the sliding member between two extreme end positions, a pair of opposing electromagnets defining said extreme end positions and having pole shoes assigned to each selection means, said pole shoes of such electromagnets being followed by diverging ramps against which said sliding members are magnetically held in either end position, and fixed vertical cams acting on two-arm levers and slackening the said two-arm levers perceptibly after the selection; said needles having two superimposed upper and lower arms, said upper arm having a butt which is adopted to be embedded in the needle bed by the action of a two-arm lever on the upper arm and returned



to its emergent position by the flexibility of said upper arm, the lower arm being an extension of the support base of the needle in its trick, said upper arm having a gliding foot resting on a slide face located in an extension of its associated trick, and said two-arm lever having a tuck selector mounted thereon which is adopted to be located in different positions in order to permit manually-controlled needle selection; said cam box means having at least one knitting system means including at least one movable vertical cam, said knitting system means, viewed in the direction of movement of the knitting carriage, being preceded by a fixed vertical cam and by said electromagnetic selecting means and having a movable cam (**39**) in a plane which is parallel to the plane of the cam box, for defining a butt cam slot thereby to transform a knitting system into a stitch transfer system for needles containing stitches to be transferred; said knitting system means including cams movably mounted therein for movement in a plane which is perpendicular to the plane of the cam box to transform a knitting system into a stitch transfer system for needles intended to receive stitches; said fixed vertical cam and said movable vertical cams being located alternately behind each other on one and the same butt tracks of the tuck selectors, said knitting system means including a movable alignment cam in a plane which is parallel to the plane of the cam box.

4,197,723

STITCH BONDED FABRICS, METHOD AND APPARATUS FOR MAKING THE SAME

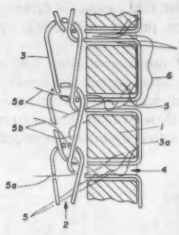
Gustav Ehedy, Augustusburg; Heinz Kemter, Karl Marx Stadt; Wilfried Ponitz, Plauen; Engelbert Ehrlich, Flöha; Walter Politze, Karl Marx Stadt; Walter Scholtis, Karl Marx Stadt, and Wolfgang Wunsch, Karl Marx Stadt, all of German Democratic Rep., assignors to VEB Wirkmaschinenbau Karl-Marx-Stadt, Fed. Rep. of Germany

Division of Ser. No. 823,361, Aug. 10, 1977, Pat. No. 4,158,292. This application May 15, 1978, Ser. No. 906,189

Int. Cl.[2] **D04B** *23/06*

U.S. Cl. 66—85 A **14 Claims**

1. A warp knitting machine, particularly a sewing-knitting machine for the production of a sewn-knitted fabric made of fleece, preferably fiber fleece, comprising a row of side-by-side pointed slide needles, which can be locked by means of respective locking wires, thread guiding eye needles which are located opposite the slide needles, a knock-over comb, a counter hold comb for the supporting the fleece during its travel past and during the piercing of the needles and a fleece retainer bar which limits the passage space for the fleece, said bar being disposed below the slide needles, as well as opposite the knock-over comb, characterized in that the counter holding comb **12** is a rigid arrangement, non-flexible and non-yielding to the



forces engendered by the slide needles piercing the fleece and extends at an angle to the slide needles **7** and itself comprising free ended non-yielding sinker shaped prongs **14** the ends **14***a* of which are disposed opposite the points of the slide needles, said ends **14***a* being disposed laterally outwardly of the inner surface **13***a* of the fleece retainer bar **13** and upstream in the sense of fleece travel of the fleece retainer bar **13**, the fleece retainer bar being spaced downstream of the sinker shaped prongs **14**.

4,197,724

KNITTING METHOD

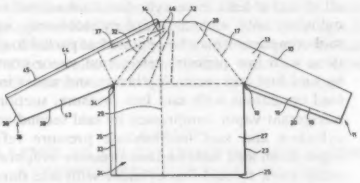
Frank Robinson, and Nigel S. Whatmough, both of Breaston, England, assignors to Courtaulds Limited, London, England

Filed Sep. 28, 1978, Ser. No. 946,727

Claims priority, application United Kingdom, Oct. 4, 1977, 41160/77

Int. Cl.[2] **A41B** *9/06*

U.S. Cl. 66—176 **6 Claims**



1. A method knitting on a knitting machine a blank for a sleeved garment, the method comprising the steps of (1) knitting fabric for one sleeve and for an associated sleeve shoulder portion for a yoke for the garment, so that knitted courses extend lengthwise of said sleeve fabric and through said associated sleeve shoulder portion towards the neck of the garment, (2) knitting front and rear body fabrics and associated front and rear body shoulder portions for said yoke, so that knitted courses extend in the waist-neck direction in said body fabrics and continue toward the garment neck through said body shoulder portions, and (3) knitting fabric for the other sleeve of the garment and for an associated sleeve shoulder portion for the garment yoke, so that knitted courses extend lengthwise of the sleeve fabric and through the associated sleeve shoulder portion towards the garment neck, whereby said garment yoke comprises front and rear fabrics, each of said fabrics comprising a body shoulder portion and a part of each of said sleeve

shoulder portions, and wherein wales extend in the direction around the yoke, said method also including the step of, (4) shaping said yoke by knitting some courses thereof shorter than the longest courses thereof so that the shorter courses do not extend completely to the neck of the garment.

4,197,725

WARP KNITTING MACHINE WITH JACQUARD ARRANGEMENT

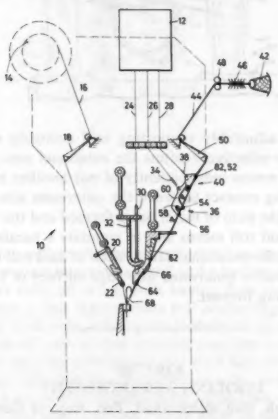
Karl Kohl, Obertshausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Nov. 7, 1978, Ser. No. 958,440

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750087

Int. Cl.[2] D04B *23/00, 27/00*

U.S. Cl. 66—213 **7 Claims**



1. A warp knitting machine wherein the pattern threads are controlled by a jacquard mechanism comprising, in combination:

(a) thread braking means operatively coupled to and controlled by said jacquard mechanism and adapted to receive said pattern threads therethrough; and

(b) thread tensioning means operatively coupled to and controlled by said jacquard mechanism and adapted to receive said pattern threads therethrough, said thread tensioning means being activated at prescribed intervals by said jacquard mechanism after said thread braking means.

4,197,726

COMBINATION LOCKS

Tim M. Uyeda, South San Gabriel, Calif., assignor to La Gard, Inc., Torrance, Calif.

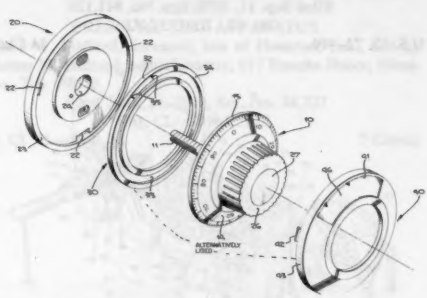
Filed Aug. 15, 1977, Ser. No. 824,986

Int. Cl.[2] E05B *37/00, 63/00*

U.S. Cl. 70—332 **5 Claims**

1. In a combination lock including a dial having a shaft extending into the housing of the combination lock for manipulating the tumblers of the combination lock and a disc mounted on the housing for supporting the dial, the improvement comprising:

a pair of interchangeable members, mounting means on the disc for alternatively mounting one of a pair of interchangeable members, the first interchangeable member comprising spacer means for spacing the dial from the disc, the spacer means having connector means thereon for covering and being held by the mounting means to hold the first interchangeable member to the disc and for covering the mounting means so it is not visible, the second interchangeable member comprising cover means for covering at least a portion of the dial, the cover means having connector means thereon for covering and being



held by the mounting means to hold the second interchangeable member to the disc and for covering the mounting means so it is not visible, the cover means having a window through which the dial can be seen.

4,197,727

METHOD OF CONTROLLING A SHAPE OF A ROLLED SHEET

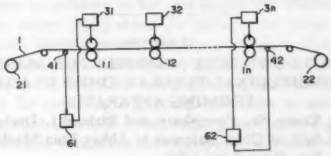
Shinichi Ikemi, Amagasaki, and Michio Shimoda, Kobe, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1978, Ser. No. 958,394

Claims priority, application Japan, Nov. 9, 1977, 52/134916

Int. Cl.[2] B21B *37/06*

U.S. Cl. 72—12 **2 Claims**



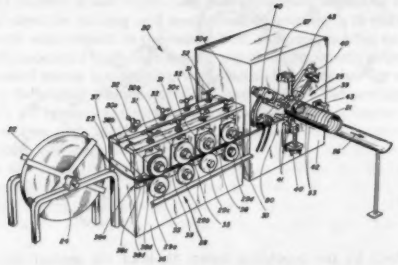
1. A method of controlling a shape of a rolled sheet in a tandem type roll mill, which comprises disposing first and second shape meters for detecting each tension distribution in the transversal direction of the rolled sheet between a pay-off reel and a first stand and between a last stand and a tension reel; controlling a roll bending force or a distribution of a roll coolant for each of the first to the lth stands so as to give a desired pattern of a tension distribution detected by the first shape meter which gives a constant forward slip and a constant backward slip in the transversal direction of the rolled sheet; and controlling a roll bending force or a distribution of a roll coolant for each of the m th to the last stands so as to give a desired pattern of a tension distribution detected by the second shape meter which gives a constant forward slip and a constant backward slip in the transversal direction of the rolled sheet wherein the reference l and m respectively are intermediate stands.

4,197,728

FLEXIBLE PIPING METHOD AND APPARATUS OF PRODUCING SAME

Lloyd E. McGowen, High St., R.R. 63, West Lebanon, Ind. 47991

Filed Sep. 11, 1978, Ser. No. 941,125
Int. Cl.² B21C *37/12*
U.S. Cl. 72—49 **14 Claims**



1. A method of forming a flexible metal pipe having a plurality of interlocked windings comprising the steps of:

setting a timer for a first interval of time and for a second interval of time;

forming a metal band into an interlockable shape;

spiralling said interlockably shaped metal band into a plurality of interlocked windings, the leading end portion of each winding interlockingly engaging the leading end portion of a corresponding subsequent winding, said interlocking continuing throughout the entire circumference of each winding;

said metal band being spiralled into said interlocked windings during said first interval; and

automatically moving a forming tool against said interlockably shaped metal band before it becomes interlocked so as to shape a portion of said interlockably shaped metal band such that at least a portion of the leading end portion of one winding and the leading end portion of said corresponding subsequent winding are prevented from achieving said interlocking engagement thereby forming at least a portion of one free winding between said interlocked windings and said forming tool being moved against said band during said second interval of time.

4,197,729

HOLD DOWN ROLL ASSEMBLY FOR ALIGNING LONGITUDINAL TUBULAR EDGES IN A TUBE FORMING APPARATUS

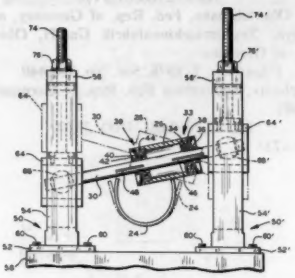
John L. Young, Sr., Perrysburg, and Richard L. Dreier, Northwood, both of Ohio, assignors to Abbey Etna Machine Company, Inc., Perrysburg, Ohio

Filed Sep. 1, 1978, Ser. No. 938,989
Int. Cl.² B21D *5/12, 39/02*
U.S. Cl. 72—52 **3 Claims**

1. In an apparatus for forming a tube of predetermined diameter from a continuous flat strip of metal wherein the outermost side edge surfaces of the strip are joined together to form a tube including roll means for supporting the strip along a longitudinal axis thereof, a first set of roll means for forming the flat strip into a generally U-shaped cross-section, a second set of roll means for forming the strip from a U-shaped cross-section into a generally annular cross-section, and an assembly for maintaining alignment of the formed strip disposed between the first set of roll means and the second set of roll means, said assembly comprising:

at least a pair of cooperating roll means for engaging and guiding the outermost side edge surfaces of the formed strip, one of said roll means being positioned to contact one of said side edge surfaces of the strip of metal and another of said roll means being positioned to contact the other of said side edge surfaces of the strip of metal;

means for rotatably supporting each of said roll means to permit each of said roll means to rotate about an axis to establish rolling contact between the outermost side edge surfaces of the strip of metal being formed and the respective one of said roll means; and



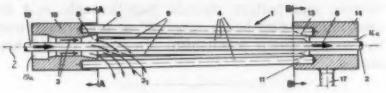
means for adjustably supporting said rotatably supporting means to selectively adjust the rotational axis of each of said roll means independently of one another to maintain the rolling contact between the outermost side edge surfaces of the strip of metal being formed and the respective one of said roll means and to maintain a parallel relation between the rotational axis of each of said roll means and the respective outermost side edge surface of the strip of metal being formed.

4,197,730

COOLING ARRANGEMENT

Hans Paulitsch, Bad Reichenhall, Fed. Rep. of Germany, assignor to Stahlwerke Peine-Salzgitter Aktiengesellschaft, Peine, Fed. Rep. of Germany

Filed Jun. 6, 1978, Ser. No. 913,079
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2726473
Int. Cl.² B21B *43/00, 45/02*
U.S. Cl. 72—201 **9 Claims**

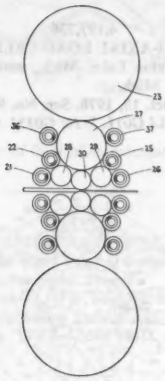


1. A cooling arrangement, particularly for cooling rolled stock including wires, rods and the like, comprising at least one unit which includes a first end member and a second end member which are longitudinally spaced from one another and which have respective axially aligned passages; a plurality of bars connecting said end members and angularly spaced about the axis of alignment of said passages, said bars having first ends connected to said first end member on a first circle surrounding the passage of said first end member and also having second ends connected to said second end member on a smaller-diameter second circle surrounding the passage of said second end member, so that the space bounded by said bars converges from said first towards said second end member; means for admitting a flow of cooling fluid under pressure into contact with a workpiece travelling through said passages; and means for allowing the cooling fluid to escape between said bars subsequent to such contact.

4,197,731
ROLLING MILL CAPABLE OF INCREASED TORQUE TRANSMISSION

Robert C. Verbickas, Wolcott, and John W. Turley, Oxford, both of Conn., assignors to T. Sendzimir, Incorporated, Waterbury, Conn.

Filed May 19, 1978, Ser. No. 907,559
Int. Cl.[2] B21B *29/00*
U.S. Cl. 72—242 2 Claims

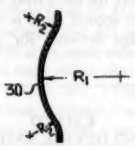


1. A rolling mill arrangement comprising an opposed pair of work rolls, a main intermediate roll and a backing roll for each of said work rolls, all of said rolls having their axes in a single vertical plane, a side intermediate roll contacting each side of each of said work rolls, a first pair of side back-up rolls contacting each side of each of said main intermediate rolls, a second pair of side back-up rolls contacting each side of each of said intermediate rolls and side intermediate rolls, and a third pair of side back-up rolls contacting each of said side intermediate rolls, all of the rolls associated with each of said work rolls constituting a cluster each of said main intermediate rolls being the only rolls directly driven.

4,197,732
SYSTEM FOR PRODUCTION OF METAL TEAR TABS

Jens L. Moller, Darien, and Charles S. Kubis, Palos Heights, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Division of Ser. No. 835,863, Sep. 23, 1977, Pat. No. 4,215,080.
This application Aug. 23, 1978, Ser. No. 936,163
Int. Cl.[2] B21D *28/00*
U.S. Cl. 72—335 7 Claims

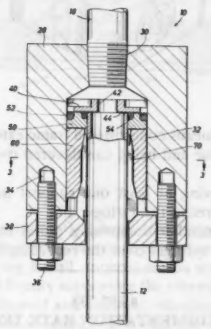


1. A method of forming pull tabs for easy opening containers and the like from a strip of soft temper stock, said method comprising the steps of supplying the stock, progressively feeding the stock, longitudinally stiffening the stock, and progressively sequentially blanking and forming the stock into individual pull tabs arranged transversely of the stock, and severing the pull tabs from the stock, said longitudinally stiffening being effected in the central portion of the stock, said blanking and forming being effected on opposite sides of the longitudinally stiffening of the stock, and thereafter the severing of the pull tabs from the stock being effected across the portion of the stock wherein the longitudinal stiffening is effected.

4,197,733
PRESSURE TEST APPARATUS

Richard W. Holland, deceased, late of Houston, Tex., and by Donna M. Holland, administratrix, 617 Rancho Bauer, Houston, Tex. 77079

Filed Mar. 28, 1979, Ser. No. 24,727
Int. Cl.[2] G01M *3/28*
U.S. Cl. 73—49.1 7 Claims



1. A connector apparatus for connecting to the unthreaded end of a heat exchanger tubing to enable testing of the tubing with a liquid test medium, the apparatus comprising:

(a) an outer body having a cylindrical counterbore therein and an externally accessible opening for admission of a liquid test medium;

(b) a thrust ring having an internal abutting shoulder which limits the entry of the heat exchanger tubing to be tested on insertion of the tubing into said cylindrical counterbore;

(c) a piston ring adapted to fit about the tubing to be tested and slidably positioned within said cylindrical counterbore, said piston ring having seal means thereon to prevent leakage therepast and which piston ring moves in response to pressure within said cylindrical counterbore;

(d) collet means fitting about the tubing to be tested;

(e) tapered thimble means slidably positioned adjacent to said piston ring within said cylindrical counterbore and adapted to be moved by said piston ring against said collet means for imparting a gripping movement to said collet means such that said collet means grips the tubing while said thimble means has moved against said collet means; and

(f) end closure means defining the position of said collet means within said cylindrical counterbore and which closure means is axially formed with a central passage to permit the tubing to be tested to be inserted therethrough to be gripped by said collet means and further to abut said thrust ring.

4,197,734
APPARATUS FOR DETERMINING BLOOD CLOTTING TIME

Alexander Rosenberg, 1000 Edgehill Rd., Roslyn, Pa. 19001

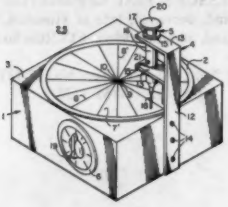
Filed Jul. 28, 1978, Ser. No. 928,858
Int. Cl.[2] G01N *33/16*
U.S. Cl. 73—64.1 12 Claims

1. An apparatus for determining the change in viscosity of a fluid which comprises

a base;

a means for retaining a syringe adapted to contain a fluid sample to support the syringe over the base;

a recording means for recording drops of fluid which drop from the syringe, the recording means being rotatably carried on the base and beneath the syringe;



the retaining means comprising a frame extending upwardly from the base and being cantilevered over the recording means,

the frame having at least one support member which is adapted to retain the syringe; and

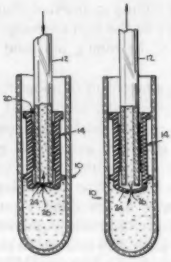
the support member comprising plural means to retain a plurality of syringes over the recording means.

4,197,735

BLOOD SEDIMENTATION RATE TEST MEANS

Robert A. Munzer, and Benjamin F. Weiner, both of Glens Falls, N.Y., assignors to Chase Instruments Corporation, Poultney, Vt.

Filed Nov. 6, 1978, Ser. No. 958,264
Int. Cl.[2] B01L *11/00*
U.S. Cl. 73—61.4 **5 Claims**



1. Blood sedimentation rate test means, comprising:

(a) a blood collecting vessel,

(b) a plunger in said vessel, movable axially thereof,

(c) a calibrated measuring tube extending into said collecting vessel and connected to said plunger for axial movement therewith, and

(d) pressure actuated, normally closed valve means in said plunger operative between said collecting vessel and said measuring tube,

(e) said valve means being adapted to open when the measuring tube is manually moved relative to the collecting vessel to push the plunger against the blood collected therein,

(f) whereby blood is forced out of the collecting vessel, through the open valve means, and into the measuring tube until it attains a predetermined level therein,

(g) said valve means being adapted to close and to confine the displaced blood to the measuring tube when said measuring tube and its connected plunger are immobilized relative to the collecting vessel,

(h) the valve means being adapted to open under negative pressure when the measuring tube and its connected plunger are retracted relative to the collecting vessel,

(i) whereby, in the event the blood level in the measuring tube is higher than the predetermined level, blood may be returned to the collecting vessel under atmospheric pressure,

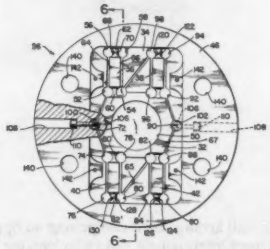
(j) said valve means being adapted to close when the measuring tube and connected plunger are again immobilized.

4,197,736

BI-AXIAL LOAD CELL

Gary L. Barrett, Union Lake, Mich., assignor to GSE, Inc., Farmington Hills, Mich.

Filed Oct. 18, 1978, Ser. No. 952,616
Int. Cl.[2] G01L *5/16;* **G01M** *17/02*
U.S. Cl. 73—133 R **13 Claims**



1. A load cell for measuring the rolling resistance of a tire as a function of a load placed on the tire, said cell comprising:

a block having first and second major parallel surfaces and a centrally disposed opening therethrough about which a shaft coupled to the tire rotates;

means defining an inner hub portion whose periphery surrounds said opening;

a plurality of beams connecting said inner hub to the remaining portions of the block defining an outer hub, each of said beams being defined by a first pair of bores on the periphery of the inner hub and a second pair of bores in the outer hub, said first pair of bores being connected by a first recessed web portion and said second pair of bores being connected by a second recessed web portion, with the thickness of said first web portion relative to the major surfaces being greater than the thickness of said second web portion, a first strain gage in one bore of the second pair and a second strain gage in the other bore of the second pair, said first gage in each beam being connected to a bridge network for measuring the rolling resistance of the tire, and said second gage in each beam being connected to a bridge network for measuring the loading force to the tire.

4,197,737

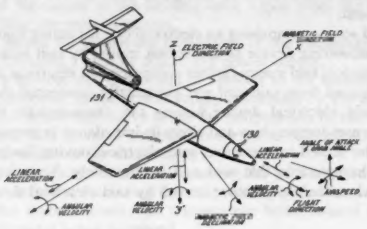
MULTIPLE SENSING DEVICE AND SENSING DEVICES THEREFOR

Roland Pittman, Maitland, Fla., assignor to Applied Devices Corporation, Hauppauge, N.Y.

Filed May 10, 1977, Ser. No. 795,575
Int. Cl.[2] G01C *23/00*
U.S. Cl. 73—178 R **11 Claims**

1. A gas flow sensing device comprising a rotatable shaft, a crystal mounted to extend axially from one end of said shaft, said crystal comprising a flat plate of a piezo electric material oriented in a longitudinal plane of said shaft, means for rotating said shaft, and commutator means coupled to said crystal,

whereby said device produces an alternating output voltage having instantaneous peaks when the plane of said crystal is



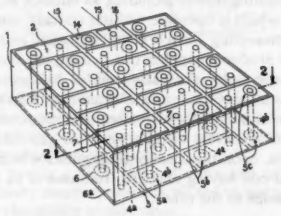
normal to the vector of flow of an external gas normal to said shaft.

4,197,738

THERMAL FLUXMETER OR HEAT FLOW METER

Michel Degenne, Clermont, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Jul. 10, 1978, Ser. No. 923,167
Claims priority, application France, Jan. 2, 1978, 78 0009
Int. Cl.[2] G01K *17/00*; H01L *35/04*
U.S. Cl. 73—190 H **10 Claims**



1. A thermal fluxmeter comprising a pickup formed of a substratum of an electrical insulating material having a network of transverse orifices, several thermocouples serially connected and of which the hot and cold junctions are respectively positioned at opposite side faces of the substratum, the respective conductors of each thermocouple passing through orifices of the substratum to connect its hot and cold junctions to each other and to connect each thermocouple to the one which precedes it and to the one that follows it in the series, the fluxmeter being characterized in that the said conductors are formed by metallic coatings (**6**, **8**, **9**, **10**, **11** and **12**) placed respectively on opposite side faces (**2**, **3**) of the substratum (**1**) and on the walls of the orifices (**4***a*, **4***b*) in the substratum, the metallic coatings (**6** and **9**) at opposite side faces of the substratum being formed of the same metal; the conductors connecting each thermocouple (**5***a*, **5***b*, **5***c* . . .) to the one which follows it and to the one which precedes it in the series including an isolated plate area (**6***a*) comprising a part of a coating covering a first side (**3**) of the substratum (**1**), a coating of a first orifice (**4***a*) associated with this thermocouple being one of a pair of orifices in said series associated with this thermocouple, an isolated plate area (**9**) comprising a part of the coating covering the opposite side (**2**) of the substratum and extending beyond the other orifice (**4***b*) associated with this thermocouple, as well as a portion of an isolated plate area (**6***b*) comprising a part of the coating of the said first surface and surrounding said other orifice (**4***b*); the coating of the two orifices (**4***a* and **4***b*) associated with each thermocouple being formed of different metals.

4,197,739

SPLIT BAR VORTEX SHEDDING FLOWMETER

Roger L. Frick, Eden Prairie, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Jun. 22, 1978, Ser. No. 917,919
Int. Cl.[2] G01F *1/32*
U.S. Cl. 73—194 VS **10 Claims**

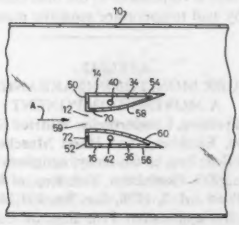
1. A vortex generating flowmeter including a vibrating bar having a longitudinal axis adapted to be supported relative to a flow conduit having a wall, support means separate from the flow conduit wall fixedly supporting the vibrating bar adjacent at least one end thereof and with the vibrating bar extending substantially across a conduit in which the vibrating bar is placed to be subjected to flow through the conduit, said vibrating bar having a width transverse to the direction of flow in which it is placed substantially less than its length parallel to the direction of flow, and a vortex generating plate mounted on the same support means as said vibrating bar immediately upstream from and closely spaced from said vibrating bar, said plate being centered with respect to said vibrating bar in direction generally transverse to the direction of flow and said plate being substantially wider than the vibrating bar in direction of the width of said vibrating bar, and said plate being substantially thinner in direction parallel to the direction of flow than in transverse width, said plate being fixedly supported at both of its ends relative to the vibrating bar at locations adjacent the opposite ends of the vibrating bar only whereby the vibrating bar may vibrate between its ends relative to the plate.

4,197,740

FLUID FLOW MEASURING APPARATUS

John C. McNabney, Verona, Wis., assignor to Wehr Corporation, Milwaukee, Wis.

Filed Sep. 8, 1978, Ser. No. 940,585
Int. Cl.[2] G01F *1/46*
U.S. Cl. 73—212 **6 Claims**



1. A fluid flow measuring apparatus for use in measuring fluid flow through a fluid flow passage, said apparatus comprising: a pair of elongated members each located in said fluid flow passage and each having a longitudinal axis extending transversely to the direction of fluid flow through said fluid

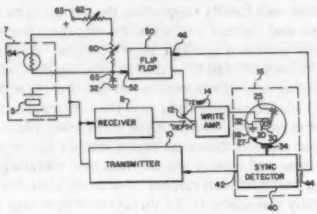
flow passage, said members each having a planar forward surface facing said direction of fluid flow, said members defining an elongated restricted flow passage therebetween, said restricted passage characterized by upstream and downstream portions spaced in the direction of fluid flow and including a reduced area throat immediately adjacent said planar forward surfaces and an enlarged flared portion at said downstream end, each of said members having an elongated chamber therein, means defining a plurality of first pressure sensing taps spaced apart along the length of one of said elongated members and providing fluid communication between said reduce area throat and said elongated chamber of said one of said elongated members, and means defining a plurality of pressure sensing taps spaced along said planar forward surfaces of the other of said elongated members and providing fluid communication between said fluid flow passage and said elongated chamber of the other of said elongated members.

4,197,741

MARINE DETECTION APPARATUS

Ray E. Morrow, Jr., 1210 Rafael St., Salem, Oreg. 97303

Division of Ser. No. 743,590, Nov. 22, 1976, Pat. No. 4,122,428.
This application Aug. 28, 1978, Ser. No. 937,536
Int. Cl.[2] G01K *7/16;* **G01S** *9/68*
U.S. Cl. 73—344 **6 Claims**



1. Temperature detecting apparatus comprising:

a switching device including a time constant circuit for determining the duration of the device's output, said time constant circuit including a temperature sensitive element,

a rotating scanner including a light source mounted thereupon which is responsive to the output of said switching device such that said light source is illuminated during the output of said device,

and synchronizing means for synchronizing the operation of said switching device with rotation of said scanner to initiate operation of said switching device when said light source is a given rotational position for causing said light source to produce an arcuate column of light in accordance with the duration of output of said switching device which in turn is responsive to the time constant thereof as affected by said temperature sensitive means.

4,197,742

TEMPERATURE MONITORING ARRANGEMENT FOR A MOVING COMPONENT

Bernd-Rainer Freiberg, Lampertheim; Wilfried Gehl, Weinheim; Jürgen Liebe, Kirchberg, and Horst Muschelknautz, Crailsheim, all of Fed. Rep. of Germany, assignors to Voith Turbo GmbH & Co., KG, Crailsheim, Fed. Rep. of Germany

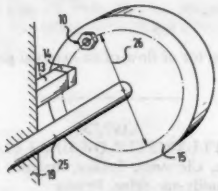
Filed Jul. 5, 1978, Ser. No. 921,246
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1977, 2730141
Int. Cl.[2] G01K *7/00*
U.S. Cl. 73—362 CP **22 Claims**

1. An arrangement for monitoring the temperature of a moving component for generating a signal, or the like, when a preset temperature is reached, comprising:

a stationary measuring device which is held stationary relative to the moving component;

a temperature sensor for being placed on the moving component;

said sensor comprising an electrical coil for acting upon said measuring device as said sensor moves by said measuring device; said sensor further comprising an electrical device spaced from said coil and electrically connected thereto; said electrical device having the characteristic that it senses temperature and alters its impedance in response to the sensed temperature; said electrical device having the characteristic that said coil is effectively short-circuited when the temperature sensed by said electrical device is



on one side of said preset temperature and said coil is effectively open when the sensed temperature is on the other side of said preset temperature;

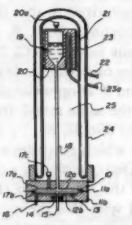
said measuring device including an initiator having an oscillator which is operable without contact with said sensor; said measuring device being arranged and placed such that it produces impulses due to damping occurring in said oscillator only when said coil, as it is moved past said measuring device, is in a selected one of its effective conditions of being short-circuited or open circuited, and said measuring device being adapted to generate a signal, or the like, upon the absence of impulses which is indicative of said coil having changed from one of its said effective conditions to the other.

4,197,743

APPARATUS FOR MEASURING BAROMETRIC PRESSURE

Thomas M. Dauphinee, Ottawa, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Jan. 17, 1979, Ser. No. 4,323
Claims priority, application Canada, Feb. 10, 1978, 296947
Int. Cl.[2] G01L *7/08, 9/12*
U.S. Cl. 73—384 **4 Claims**



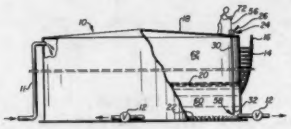
1. Apparatus for measuring barometric pressures comprising:

(a) a housing made of high thermal conductivity metal and defining a cavity therein,

(b) a diaphragm of flexible spring type material clamped in a position across the cavity dividing it into upper and lower portions,

(c) a connecting passage leading from the lower portion of the cavity to the pressure to be measured,
(d) a low boiling point liquid filling part of the upper portion of the cavity in the housing with vapor from the liquid filing the remaining part,
(e) means for measuring deflections of the diaphragm and providing a control signal to a power supply,
(f) a heating coil positioned in relation to the housing and connected to the power supply controlled by the electrical means such as to bring the temperature of the liquid and thus its vapor pressure to a level to balance the pressures across the diaphragm,
(g) thermal insulation encompassing the housing, and
(h) means for measuring the temperature of the housing and the liquid therein, this temperature being related to the pressure being measured.

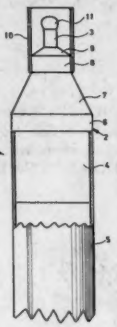
4,197,744
GAS SAFETY ROOF GAUGING CONTROL HATCH ADAPTER
Robbie J. Overstreet, 205 - 20th St., Crane, Tex. 79731
Filed Aug. 14, 1978, Ser. No. 933,419
Int. Cl.[2] G01N 1/12
U.S. Cl. 73—421 B **7 Claims**



1. In a closed crude oil storage tank having a bottom, sides, and roof, which cooperate together to form an enclosure within which corrosive liquid crude oil having a liquid phase and a vapor phase can be stored, the combination with said tank of a gas safety control hatch;
said hatch having a floor, sidewalls attached to said floor, and a closure means removably affixed to said sidewalls in spaced relationship to said floor;
a hollow conduit through which a sampling apparatus can pass, said conduit having one end coupled to and affixed to said floor such that said one end of said conduit opens into said hatch, and the other end of said conduit downwardly depends from said floor and into the interior of said tank, so that communication is established between the interior of the tank and the interior of said hatch;
the terminal end of said other end of said conduit extends into close proximity of the tank bottom so that when the tank is filled with sufficient liquid to cover the terminal end of said other end of the conduit, a liquid lock is established which prevents communication between the vapor space of the tank and the interior of the hatch, and a person can extend a sampling apparatus from the interior of the hatch, through the conduit, into the liquid phase of the tank, whereupon a liquid sample can be withdrawn without subjecting the person to vapors from the vapor space of the tank.

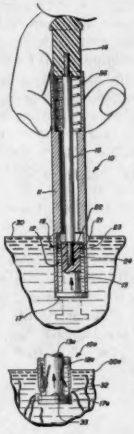
4,197,745
DISPOSABLE SAMPLING APPARATUS FOR OBTAINING SAMPLES FROM MOLTEN MATERIALS
Lars A. T. Kumbrant, Box 23, S-190 63 Örsundsbro, Sweden
Filed Sep. 26, 1978, Ser. No. 945,825
Claims priority, application Sweden, Sep. 28, 1977, 7710870
Int. Cl.[2] G01N 1/12
U.S. Cl. 73—425.4 R **3 Claims**

1. A disposable sampling apparatus for drawing samples from melts by lowering said apparatus into the melt comprising a sand body having attached at one end thereof a handle, said sand body being very pervious to gas and having embedded therein a mold including an inlet tube projecting from the other end of said sand body, and a tubular sleeve attached to said other end and spaced from said handle to provide an open portion of said sand body between said sleeve and said handle, the width of said open portion nearest said one end of said sand body being greater than the width of said open portion nearest



said other end of said sand body such that said open portion is in the shape of a truncated cone, said sleeve extending from said other end and around said inlet tube to provide a recess between said sleeve and said inlet tube, and a gas flow path extending from said recess through said sand body to said open portion thereof.

4,197,746
SLURRY PIPET
Clifford C. Hach, and Michael D. Buck, both of Loveland, Colo., assignors to Hach Chemical Company, Loveland, Colo.
Filed Nov. 15, 1978, Ser. No. 960,752
Int. Cl.[2] G01N 1/12
U.S. Cl. 73—425.4 R **2 Claims**



1. A pipet for slurry-like material comprising, in combination, a body having a parallel wall, open-ended chamber at one end, an element disposed in said chamber for sliding movement between two limit positions, said element having an end plate which closes the open end of said chamber when the element is in one limit position, said element also having a piston portion in sliding and sealing engagement with the chamber wall, said chamber and said element being proportioned so as to define a predetermined volume between them when the element is in said one limit position, a biased plunger mounted in

said body and coupled to said element for manual movement of the element from said one limit position to open said chamber and back to said one limit position to enclose said predetermined volume of material between the element and the chamber, said open end of said chamber being shaped to a cutting edge, and said end plate including a cutting surface cooperating with said cutting edge to sever interposed material when the element is in said one limit position.

4,197,747

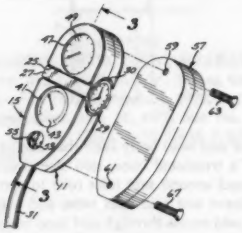
UNDERWATER INSTRUMENT CASE

Carlton L. Koehler, Box 236, Avalon, Calif. 90704

Continuation-in-part of Ser. No. 348,033, Apr. 5, 1973, abandoned. This application Aug. 1, 1974, Ser. No. 493,784

Int. Cl.[2] G01D *11/26*; G01L *19/14*; G01P *1/02*

U.S. Cl. 73—431 **14 Claims**



1. An underwater instrument case for securing depth and discrete, individually sealed pressure gauges tethered to an air hose leading from a scuba diver's air tank and comprising:

a housing including spaced apart back and front walls formed with an interior compartment defining a pressure gauge receiving cavity and an interior compartment defining depth gauge receiving cavity, said front wall overlying said cavities and adapted to cooperate therewith to removably retain said pressure and depth gauges in said respective cavities and formed with windows overlying the faces of said respective gauges;

partition means completely separating said cavities;

retaining means in said housing for retaining said pressure and depth gauges in said respective cavities; and,

means forming a hose passage leading from said pressure gauge cavity to the exterior of said case whereby said pressure and depth gauges may be positioned in said respective cavities with said hose leading out said passage to retain said gauges mounted from said case for convenient viewing during underwater dives.

4,197,748

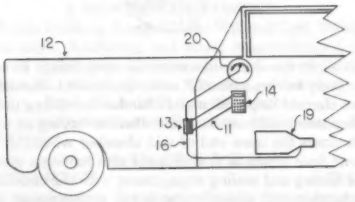
DISTANCE-MEASURING APPARATUS

Willis J. Stenehjem, Billings, Mont., assignor to Associated P & C Engineers, Inc., Billings, Mont.

Filed May 25, 1978, Ser. No. 909,363

Int. Cl.[2] G01P *3/42*

U.S. Cl. 73—490 **7 Claims**



1. Distance-measuring apparatus for attachment to a speedometer cable having rotatable flexible inner shaft and an outer sheath, said distance-measuring apparatus comprising a sensing assembly and a digital counter; said sensing assembly including a drum portion having reduced end portions and a bore therethrough for disposition over an exposed section of said rotatable inner shaft of said speedometer cable, fastening means associated with said drum portion to secure said drum portion to said inner shaft, at least one magnet affixed to said drum portion in a predetermined position adjacent a point on the periphery thereof, a housing surrounding said drum portion formed of a plurality of sections comprising separate end sections and a barrel portion, said housing being spaced from said drum to allow independent rotation of said drum portion therein, each of said reduced end portions fitted in one of said housing end sections, separate fastening means securing said barrel portion to each of said end sections of said housing and to spaced ends of said cable sheath of said speedometer cable adjacent to the exposed section of said inner shaft, a magnet-responsive switch affixed adjacent a point on the periphery of said housing; electrical leads connecting said switch with said digital counter; said digital counter being capable of receiving and retaining a preselected constant value and adding said constant value in response to an electrical signal generated by said switch when said magnet passes thereby as said speedometer cable shaft and drum portion affixed thereto are rotated.

4,197,749

ULTRASONIC WAVE ENERGY ELECTRONIC B-SCAN IMAGING APPARATUS

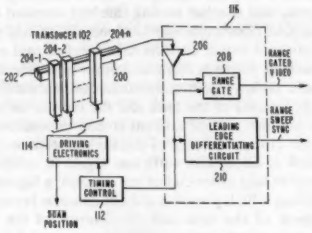
Reuben S. Mezrich, Rocky Hill, and David H. R. Vilkomerson, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 5, 1978, Ser. No. 964,899

Claims priority, application United Kingdom, Dec. 12, 1977, 51685; Dec. 12, 1977, 51686

Int. Cl.[2] G01N *29/00*

U.S. Cl. 73—625 **5 Claims**



1. Ultrasonic wave energy electronic B-scan imaging apparatus comprising:

an electro-acoustic transducer including a longitudinal bar of piezoelectric material, a given electrode substantially covering one of two opposite longitudinal faces of said bar, and a set of n separate electrodes disposed in spaced relationship along the length of the other of said two longitudinal faces, where n is a predetermined plural integer,

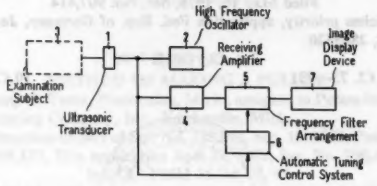
driving electronics for applying a series of n ultrasonic frequency pulses to said transducer with each separate pulse in said series being applied to a different one of said set of n electrodes,

and a single amplifier having its input coupled to said given-electrode for amplifying all detected echo signals received by said transducer from a structure to be imaged.

4,197,750
ULTRASONIC IMAGING APPARATUS OPERATING ACCORDING TO THE IMPULSE-ECHO METHOD

Dieter Hassler, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,114
Claims priority, application Fed. Rep. of Germany, May 31, 1977, 2724437
Int. Cl.[2] G01N *29/00*
U.S. Cl. 73—629 12 Claims

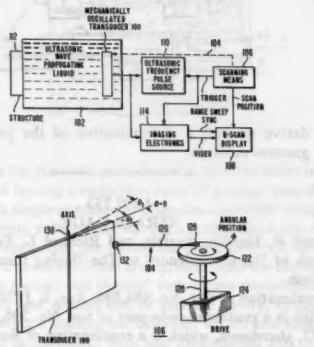


1. An ultrasonic imaging apparatus functioning according to the impulse echo method, with an ultrasonic transducer (1) for scanning an examination subject (3), particularly, also a linewise scanning, and an image display device (7) for the representation of the ultrasonic echo signals as a visible echo image, an arrangement (5) of frequency filters being allocated to the ultrasonic transducer (1), which frequency filters exhibit a frequency response which is essentially inverse to that frequency response which is exerted by the attenuating examination subject on the ultrasonic pulses in the ultrasonic transmit path, and an automatic tuning control system (6) being allocated to said arrangement (5) by means of which the prescribed inverse frequency response is dynamically shiftable from higher to lower frequencies to that degree to which echo pulses occur from increasingly deeper layers of the examination subject (3), wherein the improvement comprises, said filter arrangement (5) having a common filter input, having a multitude of individual filter circuits (8, 13 through 24 or 8, 25 through 28) coupled with said common filter input, said individual filter circuits having respective frequency response characteristics for adapting to different depth positions within the examination subject (3), said individual filter circuits having respective individual filter outputs for supplying respective output signals adapted in their respective frequency response characteristics to respective different depth positions; having selection switch means (11) coupled with each of said individual filter circuits at the respective individual filter outputs thereof, said selection switch means (11) being controlled by said automatic tuning control system (6) in synchronization with the occurrence of ultrasonic information signals from increasing depth positions within the examination subject, to successively connect the respective individual filter outputs of the respective individual filter circuits in a temporal sequence, and means connected with the selection switch means for supplying said respective output signals in a sequential manner to the image registering device (7).

4,197,751
PULSE-ECHO ULTRASONIC WAVE-ENERGY IMAGING SYSTEM INCORPORATING HIGH-ANGULAR VELOCITY OSCILLATED TRANSDUCER

David H. R. Vilkomerson, Princeton, and Reuben S. Mezrich, Rocky Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 5, 1978, Ser. No. 964,898
Claims priority, application United Kingdom, Dec. 12, 1977, 51684/77; Dec. 12, 1977, 51685/77; Dec. 12, 1977, 51686/77
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—633 9 Claims



1. In a pulse-echo ultrasonic wave energy imaging system comprising first means including an electro-acoustic transducer for generating a scanning beam of pulsed ultrasonic wave energy that is propagated through a given liquid toward a remotely-located given structure to be insonified, said structure returning ultrasonic wave energy echoes propagated through said liquid to said transducer, wherein said transducer is completely immersed in said liquid and is rotatably mounted for angular movement about a given axis extending through said transducer, said given axis being oriented substantially normal to the direction of propagation of said scanning beam; the improvement:

wherein said first means includes second means mechanically coupled to said transducer for cyclically, at a given repetition rate, oscillating said transducer back and forth about said given axis with a velocity that varies as a predetermined smooth continuous function of time between respective first and second angular limits, said given repetition rate being at least one-hundred cycles per minute.

4,197,752
THERMAL GAS PRESSURE GAUGE METHOD AND APPARATUS

Barry Block, 30610 Page Mill Rd., Los Altos, Calif. 94022

Filed Nov. 22, 1978, Ser. No. 963,103
Int. Cl.[2] G01L *21/12*
U.S. Cl. 73—755 16 Claims

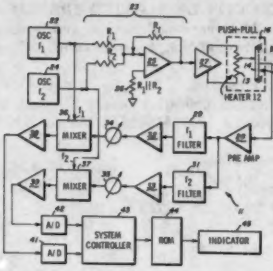
1. In a thermal gas pressure gauge:

heater means having a heater surface for disposition in gas communication with a gaseous medium, the gas pressure of which is to be sensed;

temperature cycling means for cycling the temperature of said heater surface of said heater means to cause the gaseous material coming in contact with said thermally cycled heater surface to be cyclically heated; and

sensing means spaced from said heater surface via the intermediary of a region of space for containing said gaseous

medium and being responsive to the amplitude of the resultant cyclical heating effect of said gaseous material to



derive an output determinative of the pressure of said gaseous medium.

4,197,753

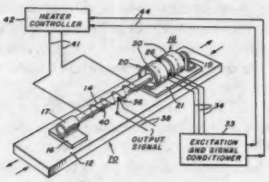
STRAIN GAGE

Darrell R. Harting, Seattle, and Richard L. Egger, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 458,596, Apr. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 296,969, Oct. 12, 1972, abandoned, which is a continuation of Ser. No. 33,398, Apr. 30, 1970, abandoned. This application Jan. 27, 1978, Ser. No. 872,849

Int. Cl.[2] G01B *7/16*

U.S. Cl. 73—766 **10 Claims**



1. A strain gage for use in detecting and measuring mechanically induced strain in a specimen subjected to a mechanical stress comprising:

an elongated link extending along the surface of said specimen and having thermal expansion characteristics essentially the same as those of the specimen;

means affixing said link to the surface of said specimen such that the link is movable relative thereto when the specimen is mechanically stressed in a direction along the length of the link, said affixing means comprising a rigid bracket connecting one end of said link to said specimen and flexible leaf means operatively supporting the other end of the link in a manner that allows free movement of said other end of the link with respect to the specimen along the longitudinal axis of the link; and

motion detecting means including a differential capacitor coupled with said other end of the link and said surface for detecting movement therebetween, the differential capacitor including an annular plate element on the link and an annular plate element affixed to the specimen, said annular plate elements being coaxial with the axis of said link, the respective plate elements being out of sliding frictional contact with any other element of the gage and the space between the two and the space around said link being empty except for nothing more than a gaseous medium having a dielectric constant which is essentially temperature invariant.

4,197,754

APPARATUS FOR MEASURING OR MONITORING CHANGES IN THE PERIPHERY OF A VESSEL

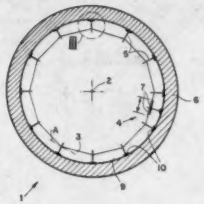
Hermann Ostendorf, Krefeld, and Ernst P. Warnke, Kerken, both of Fed. Rep. of Germany, assignors to Siempelkamp Giesserei GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed May 18, 1978, Ser. No. 907,414

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1978, 2803520

Int. Cl.[2] G01B *5/30*

U.S. Cl. 73—781 **10 Claims**



1. A device for measuring or monitoring the deformation of a peripheral wall of a vessel comprising:

a plurality of spacers mounted on said wall in angularly spaced relation to one another therealong, each of said spacers including a laterally deflectable vane secured at one end to said wall and having a free end, each vane lying substantially transverse to said wall;

a measuring wire extending along said wall and the periphery of the vessel and engaging the free ends of said vanes so as to be spaced by said vanes from said wall, said wire defining a substantially closed polygon surrounding the center of said vessel;

means for tensioning said wire to apply tension to said vanes between the ends thereof; and

position detector means connected to said wire for producing an output signal upon a displacement of said wire resulting from a distortion of said vessel at said wall.

4,197,755

ROTARY DRIVE SYSTEMS

Anthony M. Williams, Iver, England, assignor to EMI Limited, Hayes, England

Filed Dec. 1, 1977, Ser. No. 856,603

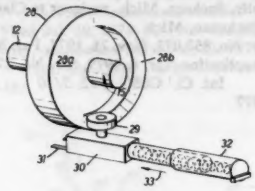
Claims priority, application United Kingdom, Dec. 23, 1976, 53923/76

Int. Cl.[2] F16H *27/04*

U.S. Cl. 74—84 R **14 Claims**

1. A rotary drive system, arranged to provide an intermittent rotation of a rotatable member about its axis of rotation in relation to a fixed frame of reference, the system including: indexing means for applying an intermittent tangential force to

the rotatable member, and compensating means for applying to the indexing means a force opposing the reaction, of the rotatable member on the indexing means, to reduce the force of reaction in relation to the fixed frame of reference.



4,197,756

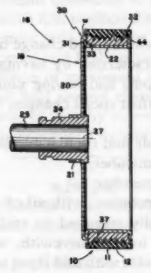
METHOD OF MAKING A PULLEY

Anthony P. Yaros, Pinconning, Mich., assignor to Peters Manufacturing Company, Inc., Kawkawlin, Mich.

Continuation-in-part of Ser. No. 723,572, Sep. 15, 1976, Pat. No. 4,098,137. This application Apr. 27, 1978, Ser. No. 900,342

Int. Cl.[2] **F16H** *55/36, 55/44*

U.S. Cl. 74—230.3 **3 Claims**



1. A method of making a rotary pulley for transmitting rotative movement between a rotatable element and a belt with a one-piece, hollow cup-shaped blank having a radially extending endwall hub mounting a radially outer, axially extending sidewall comprising an axial outer terminal end portion including a radially outwardly projecting annular belt retaining flange, said method comprising the steps of:

mounting a hollow, belt receiving, cylinder on the outer peripheral surface of said sidewall by axially sliding said cylinder over said sidewall into abutting engagement with said axially outer flange;

thereafter mounting a hollow, radially outwardly projecting belt retaining annular member on said sidewall axially adjacent the axially inner end of said cylinder;

exerting axially compressive forces on said sidewall while radially supporting the terminal end portion of said sidewall to outwardly bulge an axially inner portion of said sidewall adjacent said endwall; and

axially compressing the axially inner bulge portion to form a radially outwardly projecting, double wall thickness, annular retaining fold at the axially inner end of said sidewall;

said compressing step being accomplished by radially outwardly flaring the axially inner end of said sidewall into abutting engagement with the axially inner end face of said annular belt retaining annular member to secure said annular belt retaining member and said cylinder.

4,197,757

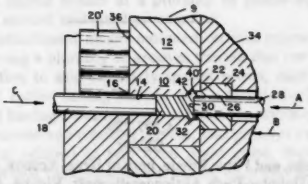
METHOD AND APPARATUS FOR THE COLD FORMING OF METAL

Kenneth P. Hackett, 1001 W. Kirkland Ave., Nashville, Tenn. 37204

Filed Apr. 13, 1977, Ser. No. 787,056

Int. Cl.[2] **B21C** *23/08, 27/00, 25/04, 31/00*

U.S. Cl. 72—264 **6 Claims**



1. Apparatus for the cold extrusion of a metallic billet into a tubular product having a reduction ratio of greater than about 100 percent in a single continuous extrusion operation comprising means defining a die cavity having a longitudinal axis open at its opposite ends, said die cavity having a first end thereof provided with a cross-sectional area greater than the cross-sectional area of a second end thereof, ram means reciprocatably received within said second end of said die cavity, elongated anvil means having a leading end disposed within said enlarged first end of and in alignment with said longitudinal axis of said die cavity to define an annular orifice therebetween through which said billet is extruded, said annular orifice being radially displaced outwardly from the projection of said second end of said die cavity, power pad means including an annular portion received in and closing said annular orifice, a source of pressurized hydraulic fluid, a piston-cylinder means, means connecting said piston-cylinder means in force transmitting relationship with said power pad means, means connecting said source of pressurized hydraulic fluid in fluid communication with said piston-cylinder means, control means regulating the flow of said pressurized hydraulic fluid from said piston-cylinder means in response to the pressure within said piston-cylinder means thereby causing said piston-cylinder means to develop a substantially constant force in opposition to the extrusion of said billet when said billet is in contact with said power pad means during extrusion of said billet, said last mentioned force being constant irrespective of the rate of extrusion of said billet and contributing substantially to the formability of said billet and to the rigidity of that portion of the extruded billet outside said die cavity.

4,197,758

TRANSMISSION BY GEARS WITH DIVIDED TRAINS

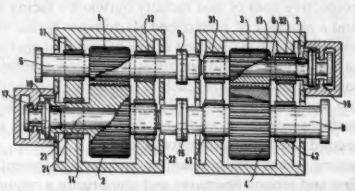
Jean-Claude Tetard, Erstein, France, assignor to Compagnie Industrielle des Telecommunications, Paris, France

Filed Jun. 8, 1978, Ser. No. 913,928

Claims priority, application France, Jun. 17, 1977, 77 18647

Int. Cl.[2] **F16H** *57/00*

U.S. Cl. 74—410 **7 Claims**



1. A gear transmission for transmitting power from an inlet

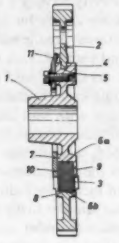
drive shaft to an outlet driven shaft, said transmission comprising; 2 N gear wheels meshing in N gear trains, each of which is arranged to transmit one Nth of the power to be transmitted, the improvement comprising a shaft coupling between each adjacent pair of gear wheels on the same shaft via one of 2 N–2 torsion shafts.

4,197,759

GEAR

Jörg Krebs, and Peter Resele, both of Graz, Austria, assignors to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Apr. 12, 1978, Ser. No. 895,543
Claims priority, application Austria, Jan. 20, 1978, 410/78
Int. Cl.[2] F16H *55/12*
U.S. Cl. 74—447 **10 Claims**



1. A gear which comprises

a hub formed with a plurality of peripherally spaced apart first apertures and with a plurality of first interlocking elements extending peripherally between adjacent ones of said first apertures,

a gear ring mounted on said hub and formed with a plurality of peripherally spaced apart second apertures, which communicate with respective ones of said first apertures, and further formed with a plurality of second interlocking elements extending peripherally between adjacent ones of said second apertures and interlocking with said first interlocking elements to hold said hub and gear ring against axial movement relative to each other,

torque-transmitting means for transmitting torque between said hub and gear ring, said torque-transmitting means comprising a plurality of first abutments formed on said hub and having radially outwardly facing surfaces adjoining respective ones of said first apertures, a plurality of second abutments formed on said gear ring and having radially inwardly facing surfaces adjoining respective ones of said second apertures and radially aligned with respective ones of said radially outwardly facing surfaces, and a plurality of prestressed elastomeric spring elements, each of which is disposed in one of said first apertures and in one of said second apertures which communicates with said one first aperture, each of said spring elements engaging said radially outwardly and radially inwardly facing surfaces adjoining said one first aperture and said one second aperture, respectively, and

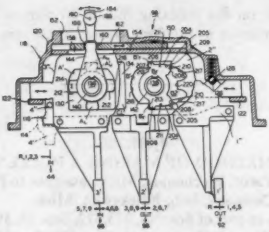
retaining means axially retaining said spring elements in said first and second apertures and comprising a retaining disc secured to said hub and engaging said spring elements on one side of said gear.

4,197,760

MANUAL SHIFT CONTROL SYSTEM FOR A MULTIPLE INPUT-MULTIPLE OUTPUT TRANSMISSION

Robert W. Wolfe, Jackson, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Division of Ser. No. 853,072, Nov. 21, 1977, Pat. No. 4,155,271.
This application Apr. 4, 1979, Ser. No. 27,126
Int. Cl.[2] G05G *9/12, 5/10*
U.S. Cl. 74—477 **6 Claims**



1. In combination with a speed change transmission having a gear train that is characterized by having at least two inputs and at least two outputs and having pluralities of input and output shift rails to effect speed changes; transmission control comprising;

a. an axially movable and oscillatable shaft;

b. a two-way cam member;

c. a one-way cam member;

d. an interlocking member, with all of said members being selectively spatially arranged on said shaft so as to slide and oscillate in unison therewith, said members being adapted to cooperate with said input and output shift rails;

e. every input and output shift rail having a cutout in alignment with said shaft so as to permit passage therethrough of said shaft;

f. a two-way cam follower surface in at least one of said cutouts adapted to cooperate with said two-way cam member to effect axial movement of the respective shift rails in one direction upon clockwise oscillation of said two-way cam member and alternately to effect axial movement in an opposite direction upon counterclockwise rotation of said two-way cam member, said two-way cam follower surface also being adapted to alternately cooperate with said interlocking member to arrest the cooperating shift rail against axial movement upon oscillation of said members;

g. a one-way cam follower surface in at least one other of said cutouts adapted to cooperate with said one-way cam member to effect axial movement of the respective shift rails in one and the same direction upon both clockwise and counterclockwise oscillation of said one-way cam member, said one-way cam follower surface also being adapted to alternately cooperate with said interlocking member to arrest said cooperating shift rail against axial movement upon oscillation of said members;

h. means for actuating, via sliding and oscillating, all of said members by motion of a hand-actuated shift lever; and

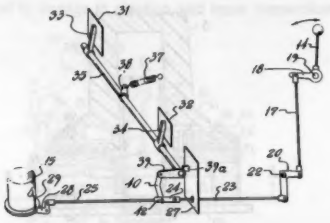
i. said plurality of input and output shift rails being arranged so that said interlocking member cooperates with a nonselected one of the input and output shift rails.

4,197,761

CONTROL LINKAGE

Claudio Volpi, Lavinio, Italy, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Jul. 10, 1978, Ser. No. 922,893
Claims priority, application Italy, Jul. 13, 1977, 25702 A/77
Int. Cl.[2] G05G *11/00, 1/14*
U.S. Cl. 74—481 **4 Claims**



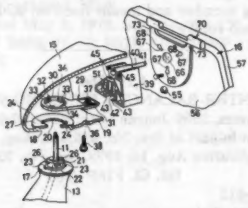
1. An engine control linkage for connection between engine output control means and first and second operating means, said linkage including a first element connected at one end to said first operating means, a link pivotally connected at one end to said first element, a second element connected at one end to said engine output control means and at its other end pivotally connected to said link, said second operating means including actuating means connected to said link and movable between a non-operative first position for restraining said latter link in in-line alignment with said first and said second elements upon operation of said first operating means, and movable to a second position of movement to pivot said link relative to said first and said second elements to a non-aligned relationship therewith, to thereby override the setting of said engine output means determined by said first operating means.

4,197,762

REMOTE CONTROL REAR-VIEW MIRROR

Toru Yamana, Fujieda, Japan, assignor to Murakami Kaimeido Co., Ltd., Japan

Filed Apr. 4, 1978, Ser. No. 893,413
Claims priority, application Japan, Apr. 4, 1977, 52-42372[U]; Jun. 29, 1977, 52-86846[U]; Aug. 8, 1977, 52-106489[U]
Int. Cl.[2] F16C *1/10*
U.S. Cl. 74—501 M **15 Claims**



8. A remote control rear-view mirror assembly, comprising:

(a) a mounting bracket having a housing mount with a shaft extending therefrom, said shaft having first cam means with a first cam surface;

(b) a housing having a bottom plate disposed on said mount with said shaft and said first cam means extending therethrough;

(c) fastener means including a ring having second cam means with a second cam surface, said ring extending around said shaft and engaging said bottom plate, said second cam means being disposed between said first cam means and said bottom plate with said first and second cam surfaces engaging each other;

(d) means locking said fastener means to said housing;

(e) a mirror holder;

(f) means mounted in said housing and supporting said mirror holder for universal pivotal movement about a fixed pivot point;

(g) an actuator;

(h) a plurality of control cables for connecting said actuator to said mirror holder at a plurality of points angularly spaced around said fixed pivot point;

(i) cable attachment means mounted on said mirror holder and having a plurality of grooves therein that correspond in position to said angularly spaced points, each of said control cables having on one end a ferrule including a portion having a diameter greater than the width of one of said grooves and retained therein, said grooves extending in radial relation to said fixed pivot point, there being holes in said cable attachment means, each said hole communicating with oe of said grooves and being greater in diameter than said ferrule; and

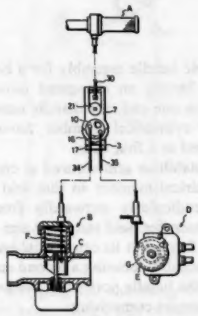
(j) said mirror holder having means retaining a portion of said cable attachment means by preventing said ferrules from being displaced from said grooves toward said holes, there being a threaded fastener extending through one of said holes threadedly into said mirror holder.

4,197,763

SYNCHRONIZING DEVICE FOR WIRE-ACTIVATED MECHANISMS

Seiichiro Yamada, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 26, 1978, Ser. No. 919,411
Claims priority, application Japan, Jul. 8, 1977, 52-90745[U]
Int. Cl.[2] F16C *1/22*
U.S. Cl. 74—501.5 R **17 Claims**



1. Apparatus for synchronizing the operation of a pair of mechanisms, each of which is actuated by a respective actuated wire, and each of which includes a respective re-setting spring which opposes actuation of the respective mechanism, said apparatus comprising:

a slider having an axis of movement, said slider being adapted for connection to an actuating wire whose movement moves the slider and the actuated wires, said slider comprising a slide body, a rocking beam rockably mounted to said slider body, said beam having a center of rocking rotation, and being adapted to be connected to an end of both of said actuated wires, one on each side of said center, tension-actuated locking means adapted to lock said rocking beam against rotation when sufficient tension is exerted in the wires, and resilient bias means tending to unlock said locking means, thereby to permit rocking movement of said rocking beam, whereby upon pulling on the actuating wire with less than said sufficient tension,

the rocking beam is released to rock to equalize tension in both of said actuated wires, thereby drawing the slider to adjust said actuated wires and to remove slack from both of them, and upon application of said sufficient tension, the locking means locks to hold said adjustment, and further pulling on said actuating wire pulls both of said actuated wires in synchronism to actuate the said mechanisms in synchronism.

4,197,764

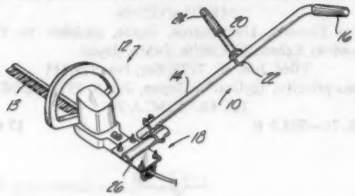
DETACHABLE HANDLE ASSEMBLY

Marcus J. Auernhammer, 11295 Engleside, Detroit, Mich. 48205

Continuation of Ser. No. 786,656, Apr. 11, 1977, abandoned. This application Nov. 30, 1978, Ser. No. 964,964

Int. Cl.² G05G *1/00*; B25G *3/00*

U.S. Cl. 74—544 **4 Claims**



1. A detachable handle assembly for a hedge trimmer, said hedge trimmer having an elongated outwardly protruding handle portion on one end, said handle assembly comprising:

an elongated cylindrical member having hand gripping means formed at a first end;

an elongated stabilizer arm secured at one end to said elongated cylindrical member so that said stabilizer arm extends perpendicularly outwardly from said elongated cylindrical member, said stabilizer arm having hand gripping means formed at its other axial end;

means for detachably securing a second end of the elongated member to the handle portion of the hedge trimmer, said detachable means comprising:

a flat plate;

a cylindrical connecting arm secured substantially entirely across one side of the plate so that a portion of the connecting arm protrudes outwardly from one edge of the plate;

means for detachably attaching one longitudinal side of the trimmer handle to the other side of the connecting plate so that the axis of the handle portion is substantially perpendicular to the axis of the connecting arm; and

means for clamping a second end of the elongated cylindrical member to the outwardly protruding portion of the connecting arm, said clamping means including means for infinitely variably adjusting the angle between the axis of said elongated member and the plane of the connecting plate and for also infinitely variably adjusting the rotational position of the elongated cylindrical member to thereby adjust the rotational position of said stabilizer arm.

4,197,765

DIAL APPARATUS

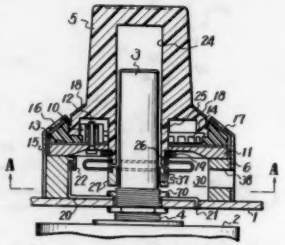
Eitaro Shimoda, Tokyo, Japan, assignor to Sakae Tsushin Kogyo Co. Ltd., Japan

Filed Mar. 29, 1977, Ser. No. 782,369

Claims priority, application Japan, Oct. 18, 1976, 51-139946[U]

Int. Cl.² G05G *1/10*

U.S. Cl. 74—553 **5 Claims**



1. A rotary support device for use with a dial apparatus having a rotary shaft comprising:

(a) a first support member (**1** and **2**) having an aperture through which a rotary shaft of a dial apparatus passes;

(b) means for fixedly attaching said rotary shaft to said first support member (**70**);

(c) a second support member (**5** and **42**) having an aperture for rotatably receiving said rotary shaft therein, the inner diameter of said aperture of second support member being selected greater than the outer diameter of said rotary shaft so that said rotary shaft can be rotated in said second support member with a clearance therebetween;

(d) means fixed on said shaft of said dial apparatus for rotatably supporting said second support member (**43**);

(e) a rotary member of said dial apparatus rotatably supported by said fixed means and fixed to said second support member **18**; and

(f) a ring-shaped coupling member which is corrugated such that it has at least two high points and two troughs and said high points fixed to said second support member and said troughs fixed to said means fixed on said shaft for resiliently coupling said second support member to said means fixed on said shaft with a gap therebetween; whereby when said rotary member of said dial apparatus is rotated, the rotation of said rotary member is transmitted through said second support member, ring-shaped coupling member and means fixed on said rotary shaft to rotate said rotary shaft.

4,197,766

COUNTER-BALANCED PUMPING SYSTEM

Robert G. James, 3509 Janene Way, Bakersfield, Calif. 93306

Continuation-in-part of Ser. No. 824,346, Aug. 15, 1977. This application Aug. 14, 1978, Ser. No. 933,269

Int. Cl. F16P *1/00*

U.S. Cl. 74—611 **4 Claims**

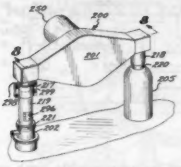
1. In a counterbalanced pumping system for use with a well having a first and second mandrel mounted for common rotation, each connected to a first and second sheave chain respectively and each storing said corresponding sheave chains in opposed spiral stack-up about the peripheries thereof according to the angular rotation of said mandrels, said first sheave chain being connected to balancing weight in a balance pit and said second sheave chain being connected to a well pump deployed in said well, the improvement comprising:

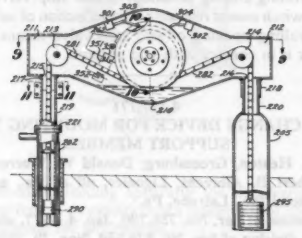
an elongate, hollow housing conformed to extend between said well and said balance pit, said housing including first and second opposed transverse lateral surfaces;

gear means mounted on said first lateral surface and extend-

ing on the interior of said housing towards said second lateral surface, said gear means including an input connection extending to the exterior of said housing and an output end driven in geared rotation by said input connection along an axis extending transversely between said pit and said well aligned across said first and second lateral surfaces, said output end being conformed to attach said first and second mandrel around the periphery thereof;

motor means mounted on the exterior of said housing and aligned to engage in rotation said input connection;





a sump cavity formed in said housing subjacent said first and second mandrel for storing lubricating fluids therein in partial immersion of said first and second mandrels;

a first and second opening formed in said housing and aligned above said lubricating fluid said first and second openings being deployed to communicate with said pit and well respectively; and

turning means deployed in said housing above said first and second openings for directing said first and second sheave chains from said mandrels to said pit and well.

4,197,767

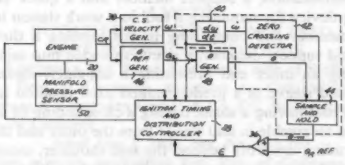
WARM UP CONTROL FOR CLOSED LOOP ENGINE ROUGHNESS FUEL CONTROL

Chun-Keung Leung, Farmington, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 8, 1978, Ser. No. 904,129

Int. Cl.[2] B60K *41/18*; F02B *3/00*; G06F *15/20*

U.S. Cl. 74—860 **19 Claims**



1. A warm-up control for an internal combustion engine having sensors generating signals indicative of the operational parameters of the engine including a temperature sensor generating a temperature signal indicative of the engine's temperature, and a load sensor generating a load signal indicative of the engine's load, fuel control means for generating fuel delivery signals indicative of the engine's fuel requirements in response to the signals generated by said sensor and other input signals and a fuel delivery means for delivering fuel to the engine in response to the fuel delivery signals, said warm-up control comprising:

first signal generator means for generating a first warm-up correction signal having a value variable as a first function of the engine temperature below a first predetermined temperature;

second signal generator means for generating a second warm-up signal having a value variable as a second function of the temperature signal below a second predetermined temperature;

switch means controlling the transmission of the signals generated by said first and second signal generators to the fuel control means in response to the load signal, said switch means transmitting the signal generated by said first signal generator means to the fuel control means when the load signal is indicative of a load applied to the engine, and transmitting the signal generated by said second signal generator to the fuel control means when the load signal is indicative of the absence of a load.

4,197,768

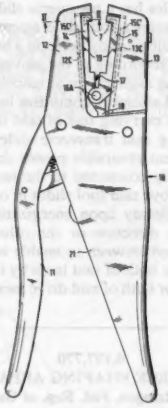
DEVICE FOR STRIPPING THE SHEATHING FROM THE ENDS OF INSULATED ELECTRICAL CONDUCTORS

Hans Undin, Akersberga, Sweden, assignor to C. A. Weidmüller K.G., Detmold, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,068

Int. Cl.[2] H02G *1/12*

U.S. Cl. 81—9.5 A **12 Claims**



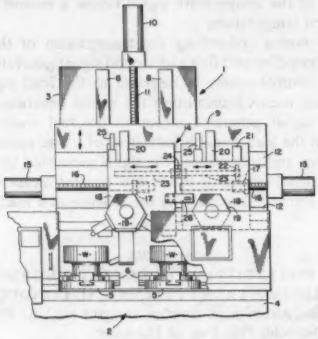
1. A device for stripping the sheathing from an insulated electrical conductor, comprising a pair of cutting and stripping jaws for receiving the conductor, each jaw comprising a stack of blades ; each blade having at least one resiliently biased leg which, at the outer periphery of its front end, is provided with a cutting projection defined by two flanks meeting at an angle in a common top, the tops of all the cutting projections in the stack aligning into one cutting edge, wherein the jaws form an inner pair of jaws which are located within two clamping jaws forming an outer pair of jaws, the inner pair of jaws being arranged for displacement therein in the axial direction of an inserted conductor, and wherein each cutting and stripping jaw is substantially box-shaped and has side walls and, at the outer portion, at least a partial bottom wall, the stack of blades being arranged therein so that its peripheral blades are guided by the inner faces of the side walls, the inner face of the bottom wall being adapted to support means for biasing the blades, and the outer face of the bottom wall being adapted to be guided by an inner face of the juxtaposed outer clamping jaw during the displacement of the inner jaws in the outer jaws.

4,197,769

DUAL SPINDLE NC CHUCKING/TURNING MACHINE

Edward E. Smith, Wickliffe, and Philip J. Stelmashuk, Euclid, both of Ohio, assignors to The Motch & Merryweather Machinery Company, Cleveland, Ohio

Filed May 5, 1978, Ser. No. 902,933
Int. Cl.[2] B23B 3/32, 9/12
U.S. Cl. 82—3 10 Claims



1. A dual spindle machine tool in which a main slide movable along a path parallel to the axes of rotation of said spindles toward and away from workpieces adapted to be mounted on the respective spindles has a transverse slideway which transversely movably carries a tool slide assembly including dual tools adapted to simultaneously perform a machining operation on such workpieces according to the movements and positions of said main slide and assembly; said machine tool being characterized in that said assembly comprises independent side-by-side tool slides each carrying one of said dual tools and each being movable along said transverse slideway on said main slide; and independent reversible power drive means on said main slide operatively connected to the respective tool slides to simultaneously move said tool slides in one direction or the other along said slideway upon energization of both of said drive means in one direction or the other; said tool slides having clearance therebetween to enable independent adjustment of either one or both of said tools by incremental energization of either one or both of said drive means in one direction or the other.

4,197,770

WORKPIECE SHAPING APPARATUS

Helmut Thumm, Metzingen, Fed. Rep. of Germany, assignor to Sauter Feinmechanik GmbH, Metzingen, Fed. Rep. of Germany

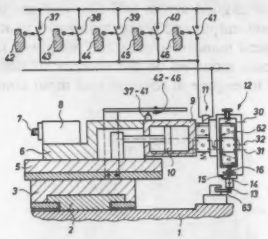
Filed Sep. 12, 1978, Ser. No. 941,647
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2742097
Int. Cl.[2] B23B 3/28
U.S. Cl. 82—14 C 2 Claims

1. In an improved apparatus for shaping workpieces in accordance with a pattern, particularly for use in combination with a turning machine of the type having means for supporting a workpiece to be cut, a cutting tool, means for supporting and moving the tool relative to the workpiece, a piston and cylinder assembly having a movable piston coupled to said means for supporting to move said tool, a source of fluid under pressure, a master pattern, a control valve and feeler means for contacting and following the pattern, the improvement comprising the combination of

stop valve means having an electrically operated actuator portion for controlling fluid flow to said piston and cylinder assembly;

conduit means interconnecting said source of fluid under pressure, said piston and cylinder assembly, said control valve and said stop valve means, said stop valve being connected between said control valve and said piston and cylinder assembly;

at least one cam and at least one cam-operated switch, one of



said cams and switches being movable with said tool for controlling closing actuation of said stop valve; and

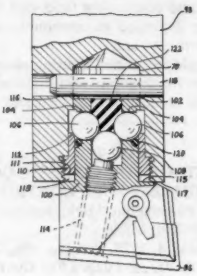
feeler switch means responsive to deflection of said feeler for controlling opening of said stop valve means when said feeler is in contact with said pattern.

4,197,771

QUICK CHANGE DEVICE FOR MOUNTING TOOL IN SUPPORT MEMBER

James W. Heaton, Greensburg; Donald W. Warren, Latrobe, and Albert B. Albrecht, Ligonier, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 756,790, Jan. 4, 1977, abandoned, which is a division of Ser. No. 528,159, Nov. 29, 1974, Pat. No. 4,018,112. This application Jun. 22, 1977, Ser. No. 808,968
Int. Cl.[2] B23B 29/00; B26D 1/12; B23B 51/00
U.S. Cl. 82—36 B 8 Claims



1. In combination; a support member and a quick change mounting device for mounting a tool in a work station in said support member and comprising means forming a threaded bore in said support member, a sleeve threaded into said bore and having an inner end presenting a shoulder, means for locating said sleeve in a predetermined axial position in said bore, said tool having a shank having a close sliding fit in said sleeve and receivable in said sleeve from the outer end thereof and protruding inwardly beyond the said shoulder, means for locating said shank in a predetermined axial position in said respective bore, coplanar perforations formed in said shank having axes positioned inwardly from said shoulder when the shank is in said predetermined axial position in said bore, clamp balls in said perforations which engage the shoulder when moved radially outwardly in the respective perforations, a central hole formed in said shank intersecting said perforations, an actuating ball in said hole, means for moving said actuating ball axially in said hole to drive said clamp balls radially outwardly in said perforations into engagement with said shoul-

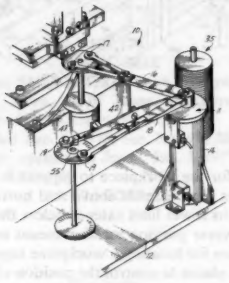
der, and means keying said tool against rotation on the axis of said shank in said support member.

4,197,772

AUTOMATIC FEEDING APPARATUS FOR PUNCH PRESS

Stanley L. Anderson, 445 Heather Heights Rd., Monrovia, Calif. 91016, and Donald F. Nettleton, 2043 Glen Springs Rd., Pasadena, Calif. 91107

Filed Mar. 10, 1978, Ser. No. 885,374
Int. Cl.[2] B26D *7/06, 7/24;* B26F *1/02*
U.S. Cl. 83—63 **9 Claims**



1. An automatic feeding apparatus for transferring workpieces to and from a workstation of a machine tool comprising:
- a supply station for workpieces;
- a workpiece pick-up arm operatively associated with the supply station;
- a first transfer arm for transporting a workpiece from the pick-up arm to the workstation;
- a second transfer arm for transporting the workpiece from the workstation to a storage station and means for removing the workpiece from the second arm and depositing the workpiece at the storage station;
- an expandable collet located at the workstation for receiving workpieces from the first transfer arm;
- spring means located adjacent the collet for stripping a finished workpiece from the expandable collet;
- first switch means for sensing the proper position of the transfer arm at the workstation and for controlling the operation of the machine tool responsive to said first switch sensing means; and
- detector switch means mounted below the expandable collet and operatively linked to the transfer arm and workstation for sensing the presence of more than one workpiece at the workstation and for preventing the operation of the machine tool when more than one workpiece is present.

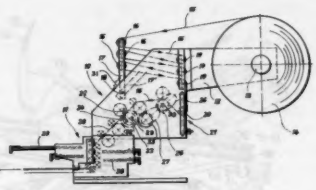
4,197,773

DEVICE FOR CUTTING A WEB INTO PREDETERMINED SECTIONS

Anton Kunzmann, and Bernd Kunzmann, both of Wellendingen, Fed. Rep. of Germany, assignors to Guk-Falzmaschinen Griesser & Kunzmann GmbH & Co. KG, Wellendingen, Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,703
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1977, 7717603[U]
Int. Cl.[2] B26D *5/34*
U.S. Cl. 83—209 **8 Claims**

1. A device for cutting a web into sections corresponding to cutting marks provided on the web, comprising an advancing roller for feeding said web along a predetermined track; a continuously rotating cutting mechanism arranged on said track downstream of said advancing roller to sever said web; a scanning device for generating output signals corresponding, respectively, to the occurrence of a cutting mark upstream of said advancing roller and to a predetermined position of said cutting mechanism after the severing operation; a continuously driven elliptical gear driving system for driving said advancing roller at a periodically variable speed, said driving system being so adjusted relative to the circumference of said advancing roller as to feed the marked portions of said web past said scanning device at a minimum speed; coupling means arranged



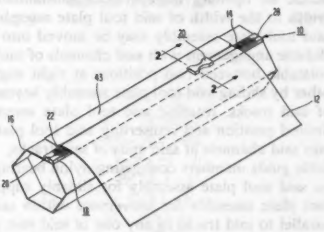
between said advancing roller and said driving system, said coupling means being controlled by said output signals to interrupt the feeding of said web during a time interval between the reading of a cutting mark and said predetermined position of the cutting mechanism; and a tension equalizing and loop-forming device arranged on said track upstream of said advancing roller to resiliently accumulate a portion of said web.

4,197,774

TRAVELING CUTTER ASSEMBLY

Balbir Singh, Media, and Ernest M. Pinhak, Boothwyn, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Nov. 9, 1978, Ser. No. 959,359
Int. Cl.[2] B26D *1/04, 7/02*
U.S. Cl. 83—374 **4 Claims**



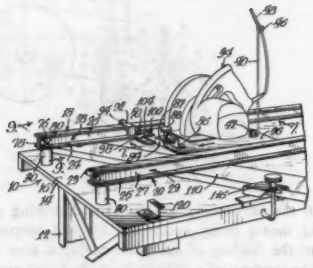
1. A cutting assembly of the type useable for severing a sheet into desired lengths, said assembly including:
- an elongate track having upper wall sections terminating in spaced-apart inner surfaces defining an elongate slot, said upper wall sections having roughened top surfaces;
- a cutter slide moveable in the slot and including a cutting element having a cutting edge adapted to engage and severe the sheet when said sheet is positioned across the slot and in overlying relationship with the roughened top track surfaces, said cutter slide including a top member overlying the cutting edge and extending laterally beyond the cutting element in overlying relationship with the roughened track surfaces, said top member having an extremely smooth stationary lower surface in regions overlying the roughened track surfaces, said cutter slide being moveable in the track with the smooth lower surface of the top member in sliding engagement with the sheet and pressing said sheet into engagement with the roughened top track surfaces to prevent relative sliding movement between the sheet and the track as the cutter slide is being moved to cut said sheet.

4,197,775

SAW TABLE

Milton E. Handler, Northbrook; Richard Sylvan, Glenview, and Herbert Baisch, Niles, all of Ill., assignors to Hirsh Company, Skokie, Ill.

Filed Oct. 2, 1978, Ser. No. 947,762
Int. Cl.[2] B27B 5/20
U.S. Cl. 83—471.3 4 Claims



2. A saw table for portable power saws and like tools comprising:

a support having an upper flat surface upon which a workpiece may be supported;

a square tool plate assembly adapted to support said saw or similar tool;

a pair of elongated parallel tracks supported on said upper flat surface of said base, each of said tracks having ends and generally horizontally spaced longitudinally extending flanges extending between said ends, said flanges defining a channel therebetween in which said tool plate assembly is slidably supported for movement parallel to said tracks, said tracks spaced apart from each other to define an opening therebetween substantially equal in width to the width of said tool plate assembly whereby said tool plate assembly may be moved into and out of slidable engagement with said channels of said tracks and rotatable between two positions at right angles to each other by sliding said tool plate assembly beyond said ends of said tracks, rotating said tool plate assembly to the desired position and reinserting said tool plate assembly into said channels at said ends of said tracks;

slidable guide members comprising nylon bearings mounted on said tool plate assembly for slidably supporting said tool plate assembly for movement within said channels parallel to said tracks in any one of said two positions at right angles to each other; and

said nylon bearings having an upper cylindrical surface extending above said tool plate assembly and having a lower cylindrical surface wider in diameter than said upper cylindrical surface, said lower cylindrical surface being disposed below said tool plate assembly.

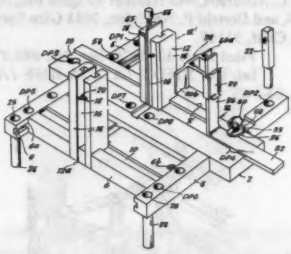
4,197,776

LOCATION APPARATUS

Gordon W. Wynn, The Glebe, Holton-cum Beckering, Lincoln Lincolnshire, England

Division of Ser. No. 584,289, Jun. 6, 1975, Pat. No. 4,041,824, which is a continuation of Ser. No. 174,423, Aug. 24, 1971, abandoned. This application Aug. 1, 1977, Ser. No. 820,455
Int. Cl.[2] B27G 5/00
U.S. Cl. 83—765 6 Claims

1. Location apparatus for use in making a saw cut in a workpiece comprising, in combination, a support structure providing a horizontal first support plane for the workpiece, saw guide means comprising at least one column-like saw guide member mounted on said support structure to extend upwardly from said horizontal first support plane, said saw guide means defining a vertical saw guide plane, said at least one column-like saw guide member being disposed at an edge of the support structure, a face of said support structure at said edge being located co-planar with an upwardly extending face of said column-like saw guide member and extending transversely thereto, whereby said faces together define a vertical second



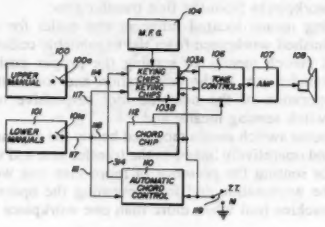
support plane for the workpiece to support it in a position in which its upper limit extends above said horizontal first support plane and its lower limit extends below the support structure, and transverse position location means mounted on said support structure for locating a workpiece supported at either of said support planes to control the position of the workpiece in a direction transverse said saw guide plane.

4,197,777

AUTOMATIC CHORD CONTROL CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENTS

Robert W. Wheelwright, Tonawanda, and Peter E. Solender, Williamsville, both of N.Y., assignors to The Wurlitzer Company, DeKalb, Ill.

Continuation of Ser. No. 586,231, Jun. 12, 1975, abandoned. This application Dec. 29, 1976, Ser. No. 755,173
Int. Cl.[2] G10F 1/00
U.S. Cl. 84—1.03 10 Claims



1. An electronic musical instrument having generator means for producing a plurality of signals corresponding to a plurality of musical tones, at least first and second keyboard portions, each having a plurality of keys for actuating and producing selected ones of said plurality of musical tones, key-operated switches responsive to the keys of said keyboard portions and a system comprising:

(A.) A plurality of connections, each comprising both an input and an output and respectively connected to said second portion keyboard keyswitches, said connections carrying common output signals when functioning as output connections,

(B.) Means for turning off said corresponding common output signals when scanning the keyswitches of said second keyboard portion,

(C.) First scanning means connected to said key operated switches for receiving signals and operative to scan the keys of the first portion of the keyboard keyswitches for

producing first signals encoded in time position in response to operation of keys of said first keyboard portion,

(D.) Second scanning means connected to said turning off means for receiving signals and operative to scan the keys of the second portion of the keyboard keyswitches for producing second signals to enable sections of said common output means to receive said first signals, and

(E.) Digital control means connected with said scanning means and responsive to said second signals for passing said first signals into the enabled section of said common output means.

4,197,778

MUSIC BOX

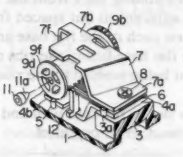
Fumito Komatsu, Shiojiri; Takeo Saito, Okaya, and Nobuaki Wakabayashi, Suwa, all of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Japan

Filed Jun. 1, 1978, Ser. No. 911,395

Claims priority, application Japan, Jun. 3, 1977, 52-72063[U]; Jun. 6, 1977, 52-73505[U]

Int. Cl.² G10F *1/06*

U.S. Cl. 84—95 R **18 Claims**



1. A music box including a casing molded from synthetic resin material, a diaphragm secured to said casing with a metallic resonating plate interposed therebetween and fixed to said casing, and a drum having its peripheral surface located in opposing relationship with the free end of said diaphragm, said resonating plate being longer than said diaphragm and having at least a portion extending parallel to said diaphragm, said resonating plate extending over said drum and in close contact with said casing, said drum being pivotally supported to said casing.

4,197,779

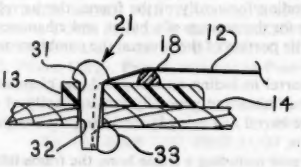
HIGH DENSITY BRIDGE PIN

Mitchell R. Holman, 15 Hoffman Ave., San Francisco, Calif. 94114

Filed Mar. 8, 1979, Ser. No. 18,840

Int. Cl.² G10D *3/04, 3/12*

U.S. Cl. 84—298 **3 Claims**



1. An improved bridge pin for stringed instruments comprising

a tapered shank depending from an enlarged head and formed of a material having a density of the order of brass.

4,197,780

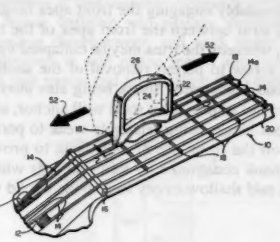
METHOD AND APPARATUS FOR STABILIZING THE TENSION OF MUSICAL INSTRUMENT STRINGS

Richard M. Smith, 2212 Witchwood La., Lindenhurst, Ill. 60046

Filed Jan. 5, 1979, Ser. No. 1,180

Int. Cl.² G10G *7/00*

U.S. Cl. 84—458 **5 Claims**



1. A musical string tension stabilizer comprising a body portion and means forming a continuous curved frictioning channel in said body portion, said frictioning channel including an initial end section having means to retain a musical string in a bearing relationship against said body portion in a first direction, a mediate element having means to retain said musical string in a bearing relationship against said body portion in a direction opposite said first direction, and a terminal end section having means to retain said musical string in a bearing relationship against said body portion in said first direction.

4,197,781

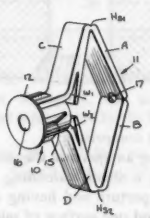
SCREW ANCHOR

Louis N. Giannuzzi, 4 Shelter Dr., Cos Cob, Conn. 06807

Filed Apr. 18, 1978, Ser. No. 897,368

Int. Cl.² F16B *35/04*

U.S. Cl. 85—3 S **14 Claims**



1. A multiple-function screw anchor for installation either in a hole drilled in a hollow wall or in a shallow or deep cavity drilled in a solid wall to support an object therefrom, said anchor comprising:

A. a shank constituted by a pair of front legs and a pair of rear legs in a diamond-like configuration, said front legs being hinged together by a front apex hinge, said front legs being joined to said rear legs by frangible side apex hinges, the ends of said rear legs defining a rear apex;

B. a socket attached to said shank adjacent said rear apex by a pair of normally outstretched resilient webs that merge with said rear legs, whereby when said diamond-like shank is compressed at said side apex hinges, it is transformed into a tongue which is insertable in said hole, making it possible to seat said socket therein, said shank, after passing through the hole, then being caused by the webs to resume its diamond-like configuration, said socket having a bore in registration with said front apex opening; and

C. a screw which is turnable into said bore and is threadably engaged thereby, the turning screw then advancing to engage the ends of said rear legs and to spread them apart to transform the shank into a truss whose bottom chord is formed by said rear legs and is pressed against the inner surface of said hollow wall to prevent removal of said anchor, the point of said advancing screw then entering and threadably engaging the front apex hinge to define a central strut between the front apex of the truss and the socket, whereby the truss may be collapsed by withdrawal of the screw to permit removal of the anchor from the hole, said compressed shank being also insertable in said deep cavity to provide a solid wall anchor, said frangible side apex hinges being relatively weak to permit a user to break off the front legs of said shank to provide a shortened shank constituted by said rear legs which is insertable in said shallow cavity to provide a solid wall anchor.

4,197,782

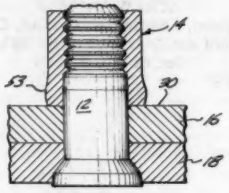
LOCKBOLT JOINT AND METHOD OF MAKING A LOCKBOLT JOINT

Louis A. Champoux, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 614,774, Sep. 19, 1975, abandoned, which is a continuation of Ser. No. 480,840, Jun. 19, 1974, abandoned. This application Aug. 23, 1978, Ser. No. 936,066

Int. Cl.[2] F16B *19/02*

U.S. Cl. 85—7 **16 Claims**



1. A lockbolt joint comprising:

a workpiece having an aperture therethrough;

a lockbolt having a shank extending through and fitting snugly in said aperture and having a portion projecting outwardly beyond one surface of said workpiece;

a lock collar swaged about said portion and having a final peripheral bulge adjacent said one surface, said final peripheral bulge having a converging portion which converges toward said one surface immediately adjacent said one surface, said final peripheral bulge being formed by swaging of a collar about said lockbolt with a swaging tool having an interior configuration which initially forces said collar into contact with said lockbolt and forms a transitory peripheral bulge of collar material at the end of said collar not adjacent said workpiece, and which forces said transitory bulge to be displaced progressively along the length of said collar as said collar is swaged into engagement with said lockbolt, the portion of said swaging tool immediately adjacent said one surface being sized to accommodate more than all said collar material therein upon engagement of said tool with said workpiece, thereby forming said final peripheral bulge, whereby longitudinal flow of said collar material in a direction away from said workpiece is minimized, thus preventing excessive tension on said lockbolt.

4,197,783

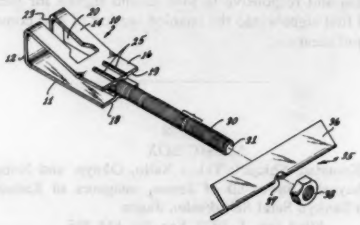
ALIGNER TIE

B. Harry Lancelot, III, Hurst, and Robert M. MacRobbie, Keller, both of Tex., assignors to Brown Company, Pasadena, Calif.

Filed May 3, 1978, Ser. No. 902,507

Int. Cl.[2] E04G *17/06*

U.S. Cl. 85—9 W **5 Claims**



1. An aligner tie, comprising:

a bar element having a first and a second end;

a capture head made from a single piece blank and having (a) a flat base, (b) a front wall extending up from the base, (c) a top portion extending back from the front wall, and (d) a end portion adjacent to but spaced from the flat base;

at least two ribs on each of the flat base and the end portion, the ribs of the flat base facing the ribs of the end portion, the bar element being welded to the ribs near the first end; and

means defining a slot in the rear wall and the top to receive a stud and its head to be captured.

4,197,784

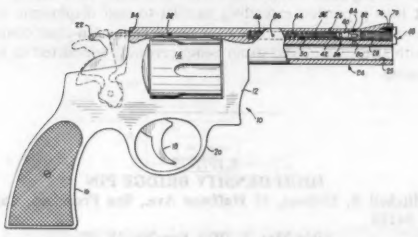
SEMI-AUTOMATIC REVOLVER

Robert W. Williams, 61 East Blvd., Gloversville, N.Y. 12078

Filed Nov. 30, 1977, Ser. No. 855,888

Int. Cl.[2] F41D *7/04*

U.S. Cl. 89—155 **13 Claims**



1. A cocking mechanism for a revolver having a frame, a rotatable cartridge receiving cylinder rotatable about an axis, a barrel extending forwardly of the frame, the barrel having a barrel bore for the passage of a bullet, and a hammer disposed near a handle portion of the firearm, the combination comprising:

(a) the barrel including an elongated gas chamber, the gas chamber extending generally longitudinally of the frame and the barrel and being spaced from the cartridge cylinder axis;

(b) the frame including a frame bore, the frame bore extending generally longitudinally of the frame and the barrel and being in communication with the gas chamber;

(c) a piston assembly including a piston disposed within the gas chamber for reciprocation and a piston rod connected to the piston, the piston rod being at least partially dis-

posed in the frame bore, the piston rod being adapted to project from the frame bore to contact the hammer and cock the hammer upon reciprocation of the piston and the piston rod;

(d) biasing means interposed between the piston and one of the frame and barrel to urge the piston toward a forward portion of the gas chamber whereby the piston rod is urged to a retracted position within the frame bore; and,

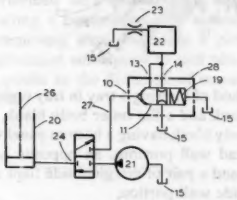
(e) the barrel bore having an opening in communication with the gas chamber so that pressure generated in the barrel bore by the firing of a cartridge may act upon the piston to displace the piston against the biasing means, whereby the piston rod may be displaced outwardly of the frame bore and the hammer may be cocked automatically.

4,197,785

HYDRAULIC ACTUATOR CUSHIONING DEVICE

William R. Weber, 4200 50th Ave., NE., Seattle, Wash. 98105

Filed Jun. 16, 1977, Ser. No. 807,226
Int. Cl.[2] F15B *11/08, 13/042*
U.S. Cl. 91—468 **3 Claims**



1. A device for cushioning in combination with a hydraulic actuator, said actuator having an actuator rod and cylinder, said device comprises: a valve body with an inlet port at one end connected to said actuator; means defining a chamber; a first passageway in said body connecting said inlet port to said chamber; said chamber being of less volume than the volume of said cylinder and said chamber having a restricted outlet at the top leading to drain and a connection at the bottom to a second passageway through said body to drain; a pressure responsive valve element means being cylindrical and reciprocally mounted in said body for alternately opening and closing said first and second passageways, means normally biasing said valve means to a position blocking said inlet port, said valve means, first, responding to said cylinder return fluid pressure at said inlet port for closing said chamber connection to drain and opening said inlet port to said first passageway for porting all said cylinder return fluid to said chamber; said cylinder return fluid in excess of said chamber volume passing through said chamber restricted outlet for cushioning said actuator rod at end of stroke, and second, said valve means responding to absence of said cylinder return fluid pressure, at said inlet port, for closing the connection of said inlet port and said first passageway and for opening said chamber bottom connection to said second passageway for emptying said chamber.

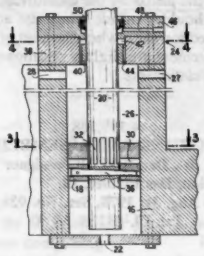
4,197,786

SUPPORT JACK MORE PARTICULARLY ADAPTED TO SUPPORT A TOOL HOLDER OF A MACHINE TOOL AND IN PARTICULAR OF A POLISHING MACHINE

Marcel O. Pillon, Gergy, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Apr. 21, 1978, Ser. No. 898,573
Claims priority, application France, Apr. 21, 1977, 77 12035
Int. Cl.[2] B24B *7/02*; F01B *31/00*
U.S. Cl. 92—86 **5 Claims**

1. A support jack more particularly adapted to support a tool holder of a machine tool, and in particular of a polishing machine, comprising wall means defining a cylinder, piston means coaxial with the cylinder and comprising a piston rod and a piston member combined with the piston rod, means defining a passage in said wall means for the passage of said piston rod, the piston member being slidable in the cylinder and defining with an end of the cylinder a variable-volume chamber, means defining an inlet aperture for supplying control fluid to the variable-volume chamber, means defining an outlet aperture for discharge of the control fluid from the variable-volume chamber, the piston member having an outer peripheral surface which defines a first annular clearance with said wall means, said means defining said passage defining a second annular clearance therebetween and said piston rod, fluid escape passageways in said piston means and evenly spaced apart around said piston rod and putting the variable-volume



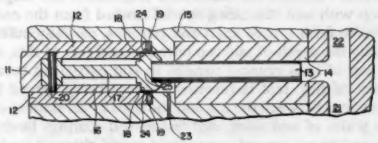
chamber in communication with said first annular clearance by way of said piston means, said escape passageways creating a throttle pressure drop between said variable-volume chamber and said first annular clearance which is higher than a pressure drop produced in said first annular clearance between said variable-volume chamber and an axially opposite side of the piston, the escape passageways comprising substantially radially extending passageways in the piston member which are evenly spaced apart and open onto the outer peripheral surface of the piston member and axially extending passageways which are defined between grooves in an outer surface of the piston rod and the piston member and extend the passageways in the piston member.

4,197,787

PUMP PISTON WITH FLEXIBLE MEMBER

William E. Schneider, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 29, 1977, Ser. No. 828,569
Int. Cl.[2] F16J *1/10*
U.S. Cl. 92—129 **1 Claim**



1. A high pressure pump for handling corrosive liquids comprising:

a cylinder formed of ceramic material;

a piston, also formed of ceramic material and subject to breakage by the application of bending forces, located within the cylinder and adapted to be reciprocated therein for moving said liquids;

an actuator spaced from the piston and adapted to reciprocate along an axis generally coaxial with the cylinder axis for moving the piston;

means connecting the actuator and piston;

said connecting means including an elongate laterally flexi-

ble member disposed between the actuator and piston and terminating at one end in a head, means securing said head to the piston and which head includes radially directed shoulder means facing the actuator, and means mounting said flexible member to said actuator;

said connecting means also including a hollow cylindrical portion extending from the actuator and coextensively surrounding the elongate flexible member and terminating at one end in a radially directed surface adjacent the facing shoulder for abutment thereagainst;

whereby substantially only tension forces are exerted in an axial direction on the piston by the elongate flexible member when the actuator moves in one direction and substantially only compressive forces are exerted in an axial direction on the piston by the cylindrical portion abutting against the shoulder means when the actuator moves in the other direction even when the axes of the cylinder and actuator movement are slightly misaligned from said general coaxial relationship.

4,197,788

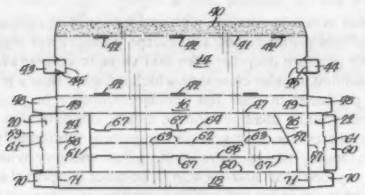
METHOD OF CUTTING AND ASSEMBLING A CARTON

Paul B. Wharton, Jr., Deerfield, Ill., assignor to Kinetics Container Corporation, Des Plaines, Ill.

Filed Aug. 31, 1978, Ser. No. 938,634

Int. Cl.² B21B *11/00*

U.S. Cl. 93—36.01 **7 Claims**



1. A method of cutting and assembling a carton having a relatively long depth, a medium length and a relatively short width comprising cutting a sheet of corrugated cardboard into a rectangular shape having two panels, slitting and trimming the ends of the sheet to provide depth and length closing elements thereon, scoring one panel of said sheet to define a back having a fastening tab on one edge and a carton side on the other edge, cutting at least two slots in said back with one edge of each slot aligning with one of said scoring edges of said back, scoring the other panel of said sheet to define a top having a second carton side on one edge and connected to said first-named carton side on the other edge, cutting a pair of slits completely through the cardboard and across the length of said top with said slits being spaced inward from the ends of said top to form spaced apart end portions, partially cutting a slit along the depth of said top between said pair of slits, scoring a pair of lines running parallel to said partial slit between said pair of slits, said last-named scorings being spaced from the junctions between the top and the sides by an amount equal to the width of said sides, said last-named scorings having at least two tabs cut inward toward said partial slit with the bases of the tabs aligning with said last-named scorings and with no scorings through said bases of said tabs, said tabs aligning with said slots cut into said back, folding said sheet along the score between the back and the carton side with the back beneath the top thereby forming an outer edge, folding said other side along the score line between the top and said other side forming another outer edge and fastening the fastening tab to said other side, setting said carton up by pressing the outer edges inward to separate the top from the back to form an elongate deep tube, folding and inserting said depth and length closing elements to close the ends of the carton, administering a sharp blow depthwise along said partially cut slit to sever said top along said slit forming an opening therein between said spaced apart end portions, pressing the two severed portions of said top into the opening in said top until said tabs on the top pop into the slots along the edges of the back to add rigidity to the sides of the carton, and inserting a filler insert into said opening in said top with the ends of the insert nesting beneath the end portions of said top.

4,197,789

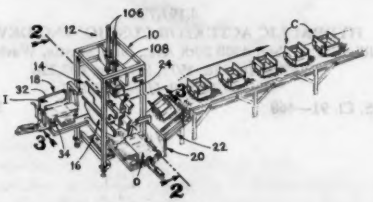
TRAY IN TRAY CONTAINER FORMING

Lenard E. Moen, 7914 Michigan, Whittier, Calif. 90602

Continuation of Ser. No. 718,129, Aug. 27, 1976, abandoned. This application Jan. 9, 1978, Ser. No. 867,767

Int. Cl.² B31B *15/26*

U.S. Cl. 93—51 M **19 Claims**



1. The method of forming a tray in tray container from a flat inner body blank and a flat outer body blank,

the inner body blank having a bottom panel with an opposite pair of end wall portions, an opposite pair of side wall portions and a pair of marginal side flaps at opposite ends of each side wall portion,

the outer body blank having a bottom panel and at least an opposite pair of wall portions on opposite sides of the bottom panel,

said method including:

applying adhesive to the opposite side wall portions of the inner body blank;

relatively moving a mandrel and a first die means to form the inner body blank into an erected tray configuration around the mandrel with the bottom panel portion of the inner body blank in contacting registration with a bottom face of the mandrel and with an opposite pair of laminated end walls comprising the pair of opposite end wall portions and the marginal flaps of the side wall portions;

applying adhesive to the inside of the bottom panel of the outer blank,

moving the inner tray carrying mandrel into contacting registration of the bottom panel area of the inner tray onto the glue bearing surface of the bottom panel of the outer blank;

and erecting the wall portions of the outer blank around and onto corresponding walls of the previously erected inner tray by relative movement of the mandrel, inner tray and outer body blank and a second die means.

4,197,790

METHOD AND APPARATUS FOR OPENING AND HANDLING FOLDED BOXES

Walter Dietrich, and Manfred Bauer, both of Weinstadt, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 901,668

Claims priority, application Fed. Rep. of Germany, May 10, 1977, 2720902

Int. Cl.² B31B *1/80*

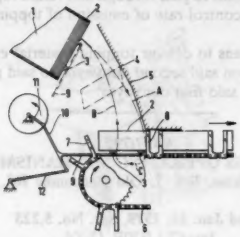
U.S. Cl. 93—53 M **4 Claims**

1. In a method for opening a folded box and preparing it for use, the improvement comprising the steps of:

removing a single folded box from a plurality of folded boxes in a magazine and holding it so as to permit relative movement of parts thereof;

putting said single folded box in moving contact with a locally fixed member, causing opening forces to be exerted on parts of said folded box to thereby define an internal space;

placing the opened box onto a moving conveyor belt;



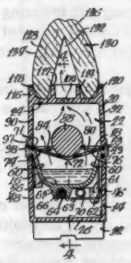
and wherein the steps of removing, putting and placing said box are performed in a substantially single sweeping movement along a continuous path extending between successive removing steps including a portion of said sweeping movement subsequent to said placing step in a direction opposite to the direction of movement of said conveyor belt.

4,197,791

ELECTRIC STEAMER

Joseph L. Vieceli, La Grange, and James C. Mysicka, Berwyn, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Dec. 14, 1978, Ser. No. 969,633
Int. Cl.² A47J *37/06*
U.S. Cl. 99—339 **19 Claims**



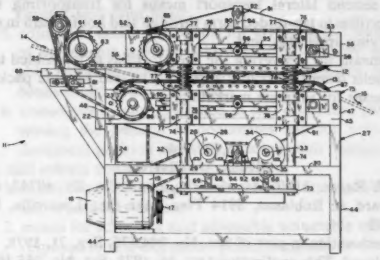
1. An electric steamer for steaming a frankfurter and simultaneously steam-warming a frankfurter bun, said steamer comprising, a base supportable on a work surface, an open-topped reservoir mounted on said base, electrical heating means disposed in said base in proximity with said reservoir for heating a quantity of liquid disposed in said reservoir, means for supporting a frankfurter above the liquid in said reservoir, and a cover mountable on said base over said reservoir to define a steaming chamber therewith, said cover being formed with an upper supporting surface on which a bun may be supported exterior to and above said steaming chamber, said cover having means for venting steam for steam-warming a bun supported thereon whereby said heating means converts said liquid into steam which passes upwardly through said chamber out said venting means against a bun supported on said cover.

4,197,792

APPARATUS FOR MOLDING AND PRECOOKING CORN AND WHEAT TORTILLAS

Fausto C. Mendoza, Cumbres de Acultzingo No. 185, Mexico City, Mexico

Division of Ser. No. 877,105, Feb. 3, 1978, abandoned. This application Nov. 13, 1978, Ser. No. 959,835
Claims priority, application Mexico, Jun. 14, 1977, 169463
Int. Cl.² A47J *37/00*
U.S. Cl. 99—349 **4 Claims**



1. Apparatus for molding and precooking tortillas under steam and pressure comprising:

upper and lower continuous conveyor bands having parallel facing surfaces for molding the tortilla,

supporting structure for each of said bands,

means for driving said bands in synchronism,

means reciprocably connecting said bands for vertical movement relative to each other including sleeves connected to the supporting structure for each band and vertical bars received in said sleeves,

means for causing one of said bands to reciprocate including cam followers connected to said vertical bars and cams having varying diameter surface means in contact with said cam followers for causing said one band to move toward and away from the other band,

spring means urging aid bands apart against the action of said cams, said

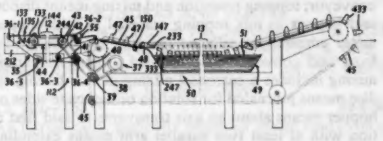
means for imparting heat to said bands to precook the tortillas during molding thereof.

4,197,793

TACO SHELL MANUFACTURING EQUIPMENT USING A LOW PRESSURE STEAM CHAMBER

Sheldon H. Hanson; Craig B. Thompson, and James E. Olson, all of Stoughton, Wis., assignors to Heublein, Inc., Hartford, Conn.

Filed Aug. 8, 1977, Ser. No. 822,737
Int. Cl.² A47J *37/12*
U.S. Cl. 99—352 **23 Claims**



1. Taco shell manufacturing equipment for processing formed and baked disk tortillas and delivering same to suitable packing means for ultimate marketing comprising:

(a) an elongated chamber,

(b) first lateral transport means,

(c) means to equilibrate moisture throughout such baked tortillas in a relatively short tempering time of the general order of about a few seconds to about a few minutes as they are passed in successive longitudinally-spaced groups of transversely disposed disks continuously and succes-

sively through said elongated chamber upon said lateral transport means and while being subjected in said chamber to relatively low pressure steam until discharged by said transport means through an exit end opening of said chamber as tempered tortillas,

(d) apparatus for lap-folding said tortillas,

(e) apparatus for frying said lap-folded tortillas, said frying apparatus including a hot fat bath,

(f) means for transferring said tempered tortillas in such longitudinally-spaced transversely disposed groups from the exit end of said chamber to said frying apparatus,

(g) second lateral transport means for transporting said tortillas in lap-folded form through said hot fat bath in said frying apparatus, and

(h) means for delivering the fried tortillas as lap-folded taco shells from said frying apparatus to said suitable packing means for ultimate marketing.

4,197,794

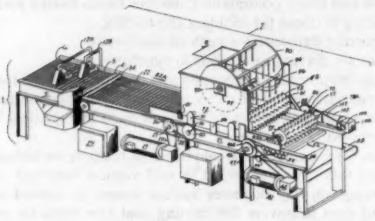
PIZZA MACHINE

Glen F. Raque, 11107 Ainwick Ct., Louisville, Ky. 40243, and Edward A. Robinson, 8914 Pine Lake Dr., Louisville, Ky. 40220

Continuation-in-part of Ser. No. 944,576, Sep. 21, 1978, abandoned. This application Oct. 26, 1978, Ser. No. 955,107

Int. Cl.[2] A21C *9/04;* **B05C** *5/00*

U.S. Cl. 99—450.1 **5 Claims**



1. A pizza topping device to apply selected ingredients to a pastry shell including:

a. first aperatured conveyor means to receive a preformed pastry shell and convey said shell in a selected direction;

b. applicator spray means disposed at a selected location above the said first conveyor means to spray a selected fluid, sauce-like material onto said pastry shell traveling on said first conveyor;

c. hopper means disposed above said first conveyor means to receive selected particulate topping substances to be applied to said pastry shell traveling on said first conveyor where said hopper means includes inperforate second conveyor means disposed in the bottom of said hopper where said topping material is carried on said second conveyor means in the same direction of travel as the direction of travel as the direction of travel of said first conveyor; topping retention and mixing means disposed in said hopper to mix topping material in said hopper and meter emission of selected quantity of topping material from said conveyor wherein said topping retention and mixing includes a carrousel mixing device having spaced disc means journaled for rotation on opposite sides of said hopper means about an axis transverse to said first direction with at least two parallel arm means extending between said disc means a selected distance from the center of said disc means for rotation of said disc means where a finger means are provided and extend from said arm means where said disc means are adapted to orient said finger means in a downward direction during the rotation of said disc means and where the outer tips of said finger means are adapted to approach said second conveyor means at the lowest point of their arc of travel in spaced relation therefrom so said finger means comb through said topping and move a portion of said topping in a direction opposite the direction of travel of said conveyor where topping to be emitted is carried on said second conveyor means with drive means to rotate said disc means of said mixer means in a direction such that the direction of movement of said finger means at the bottom of the orbital travel thereof is opposite the direction of travel of said conveyor means to pass through and retain topping in said hopper and control rate of emission of topping from said hopper;

e. delivery means to deliver topping material emitted from said hopper on said second conveyor to said pastry shells traveling on said first conveyor.

4,197,795

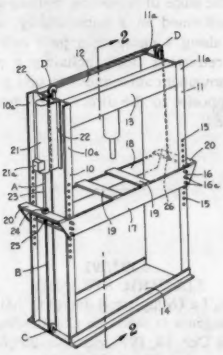
PRESS OPERATING MECHANISM

Wallace H. Hawkins, Rte. 7, Old Buncombe Rd., Greenville, S.C. 29609

Filed Jan. 22, 1979, Ser. No. 5,223

Int. Cl.[2] B30B *15/06*

U.S. Cl. 100—257 **2 Claims**



1. In a press having a pair of spaced vertical standards carrying a horizontal bed positionable at selected elevations on said standards, means for raising and lowering said bed comprising:

power operated means carried adjacent one of said standards in alignment therewith having connection adjacent one end of said bed;

a cable connected adjacent said one end of said bed;

a first pulley about which said cable is passed carried adjacent said one of said standards;

a pair of spaced pulleys carried adjacent respective standards over which said cable passes for connection adjacent the other end of said bed;

whereby force exerted by said power operated means adjacent one end of said bed is transmitted to the other end producing commensurate movement thereof maintaining alignment of said bed for positioning same at a selected elevation.

4,197,796

ALUMINUM CAN COMPACTOR

Robert G. Salatka, 8049 N. 16 Ave., Phoenix, Ariz. 85021

Filed Jan. 11, 1979, Ser. No. 2,696

Int. Cl.[2] B30B *1/02*

U.S. Cl. 100—293 **11 Claims**

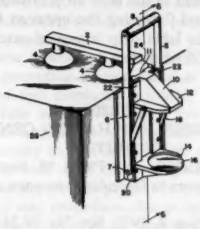
1. An apparatus for compacting aluminum containers, comprising:

guide means;

a first plate fixedly coupled to said guide means for supporting a container to be crushed, said first plate equipped with a ridge around a first portion of its periphery for defining a recessed surface which receives a first end of said container, the absence of said ridge at a second por-

tion of said periphery permitting insertion of said container when said apparatus is in a rest condition;

crushing means slidingly coupled to said guide means, said crushing means including a ridge around its periphery to form a recessed central crushing surface for receiving a second end of said container; and



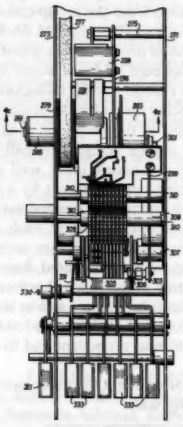
a handle assembly pivotably coupled to said guide means and coupled to said crushing means for urging said crushing means against said container when said handle assembly is lowered.

4,197,797

MODULAR HIGH SPEED PRINTING SYSTEM

Wilson P. Rayfield, Longwood, Fla.; Norman H. Preston, Rochester, N.Y.; Ronald W. Ferguson, Rochester, N.Y.; Frederick H. Dear, Rochester, N.Y.; Henry M. Korytkowski, Rochester, N.Y.; Frank L. Muster, Rochester, N.Y., and Ward L. Karns, Haynesboro, Va., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 21, 1977, Ser. No. 844,520
Int. Cl.[2] B41J *11/18*
U.S. Cl. 101—90 **14 Claims**



1. A high-speed document printing system segmented into modular functional units, said system comprising:

A. a document feeder module;

B. at least one document printing module coupled to said feeder module for printing documents fed therefrom;

C. a document receiver module coupled to said printer module for receiving said printed documents; and

D. system control means commonly associated with all of said modules;

E. said document printing module comprising:

1. a document transport means forming a document path for serially transporting documents through said printing module;

2. a document print head positioned above said document path for printing on said documents;

3. vertically reciprocatable platen means positioned in said document path and opposite said print head for supporting individual documents thereon and for raising said supported documents into contact with said print head;

4. inked ribbon means interposed between said document and said print head and adapted to transfer ink to said document when they are raised by said platen means to contact said print head;

5. adjustable actuatable means for arresting the transport of documents through said document path by adjustably stopping said documents on said platen means beneath said print head; and

6. transducer means positioned in said document path for sensing the passage of documents and for providing document position signals indicating such passage;

F. said system control means comprising:

1. means for receiving said document position signals from said transducer means;

2. means for actuating said adjustable actuatable means in response to said document position signals;

3. means for reciprocating said platen means in response to said document position signals to effect printing on documents supported by said platen means; and

4. means for monitoring the transport of documents from said feeder module through said document path to said receiving module and for detecting document jams therein;

G. said document feeder module comprising:

1. a document hopper for storing documents to be fed by said feeder module;

2. low-speed feed means for drawing documents out of said document hopper at a slow first speed so that said documents are not torn during such feeding;

3. document feed path means for receiving documents fed from said document hopper by said low-speed feed means;

4. high-speed feed means, mounted in said document feed path means, for accelerating from said slow first speed to a second, substantially-higher second speed, the documents in said feed path means;

5. exit means, communicating with said high-speed feed means, for passing said accelerated documents out of said feeder module and into said document transport means;

whereby high-speed feeding of documents from said document feeder module into said document transport means is achieved without tearing said documents.

4,197,798

METAL PLATED PLASTIC BASE INTAGLIO PRINTING CYLINDERS AND PLATES

Karl D. Bardin, 3754 Marianna Rd., Jacksonville, Fla. 32217
Continuation-in-part of Ser. No. 620,550, Oct. 8, 1975, abandoned. This application Oct. 27, 1977, Ser. No. 846,105
Int. Cl.[2] B41F *9/00*
U.S. Cl. 101—153 **20 Claims**

1. An intrinsically, perfectly balanced image ready rotogravure printing cylinder comprising:

A. a substantially solid compression resistant cylindrical base consisting essentially of homogeneous, stress-free, plastic material formed and machined to a desired precise diameter and further comprising

(a) a uniform, homogeneous cross-sectional area throughout its length with a majority of the area being plastic material, and

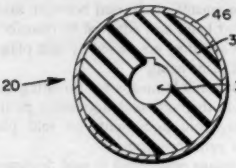
(b) an outer curved peripheral surface of substantially uniform concentricity with respect to its central axis, and

being substantially non-deformable under the high contact pressures encountered in rotogravure printing, and

B. a unitary, substantially homogeneous coating of an etchable metal

(a) having a substantially uniform thickness throughout,

(b) being affixed to and entirely surrounding the outer curved peripheral surface of said cylindrical base and



(c) being capable of receiving and maintaining printing information etched exclusively therein, without exposing the outer curved peripheral surface of the cylindrical base;

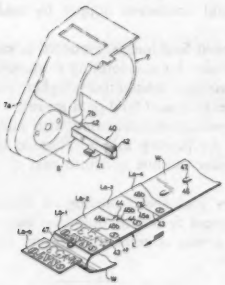
thereby providing a lightweight, easily handled isotonic and isotropic image ready rotogravure printing cylinder of substantially uniform concentricity and substantially perfect balance, which is maintainable as a stock item ready for machining of the metal to a precision diameter and imaging and etching.

4,197,799

LABEL ARRANGING DEVICE FOR LABEL PRINTING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed Dec. 15, 1977, Ser. No. 860,831
Claims priority, application Japan, Feb. 4, 1977, 52/010828
Int. Cl.[2] B41F *1/06, 3/44;* B41J *3/00*
U.S. Cl. 101—291 **10 Claims**



1. A label printing machine for printing labels, comprising:

means in said machine for defining a path of movement for a strip of labels through said machine;

label strip feed means in said label strip path of movement and including feed pins for engaging a label strip, for pushing through the label strip and for defining upraised feed lips on the label strip as said feed pins engage and move the label strip; said feed means being adapted for feeding a label strip over a platen;

a printing head including types for imprinting label pieces of the label strip;

a platen in said label strip path of movement and opposable to said types; said platen being held relatively stationary in said machine and said printing head being relatively movable towards and away from said platen;

means for moving said printing head towards and away from said platen, thereby to imprint a label piece then on said platen; said feed means being adapted to feed a label strip to move between said printing head and said platen;

a label arranging device, comprising:

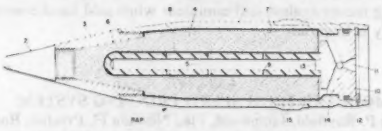
an arranging member attached to said printing head and moving therewith, said arranging member positioned in said machine and having an arranging surface in said label strip path of movement which is opposed to the surface of the label strip passing by said arranging surface and is located downstream in said path of movement from said feed means and upstream of said types in said label strip path of movement and being so placed across the width of the path of movement of the label strip through said machine for engaging and flattening the upraised feed lips of the label strip as the label strip is moved past said arranging surface by said feed means.

4,197,800

SINGLE CHAMBER RAP HAVING CENTERPORT INHIBITOR

Willis L. Greever, LaVale, and Philip M. Stevens, Rawlings, both of Md., assignors to Hercules Incorporated, Wilmington, Del.

Filed Sep. 4, 1970, Ser. No. 78,340
Int. Cl.[2] F42B *13/02*
U.S. Cl. 102—38 RA **9 Claims**



1. A rocket assisted projectile having in combination:

(a) a projectile casing;

(b) a solid propellant charge within the projectile casing extending substantially throughout the length of the casing and having an inhibited centerport therein which axially extends substantially throughout the length of the propellant charge;

(c) said propellant charge being a cast single explosive sensitized charge selected from the group consisting of double base propellants, composite-modified double base propellants and cross-linked propellants in which high explosive is present in an amount of from about 60 to 80 weight percent, and said charge having bifunctional characteristics to produce rocket thrust for the projectile in flight and high explosive blast of the projectile at target;

(d) said propellant charge being chemically bonded to an inhibitor adjacent the casing inner wall and also to the inhibitor of the inhibited centerport by a chemical bonding system at each chemically bonded surface;

(e) said chemical bonding system at each said propellant surface being a two-layer composite including as a first layer an inhibitor material selected from the group of neoprene and a vinyl chloride-vinyl acetate/triphenylmethane triisocyanate formulation, and as a second layer a polyvinylformal together with a cross-linking agent therefor bonded both to said propellant and to said first layer; and

(f) said inhibitor layer adjacent the inner casing wall bonded to said inner casing wall.

4,197,801

AMMUNITION ROUND

Clifford E. LaFever, Mission Viejo, and William J. Washburn, Capistrano Beach, both of Calif., assignors to Ford Aerospace & Communications Corporation, Newport Beach, Calif.

Filed Apr. 7, 1978, Ser. No. 894,305
Int. Cl.[2] F42B *5/02*
U.S. Cl. 102—38 CC **8 Claims**

1. A fully telescoped ammunition round comprising:

a propellant charge means having an axial cavity for supplying firing power for said ammunition round;

a projectile means housed within said cavity for being fired from said ammunition round;

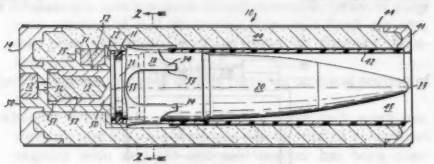
a control tube means for selectively covering portions of said propellant charge means facing said axial cavity thereby putting selected portions of said propellant charge in communication with said axial cavity and being generally positioned between said propellant charge means and said projectile means, said projectile means extending forward of said control tube means and including coupling means for releasably securing said projectile means to said control tube means;

a primer means positioned generally aft of said projectile means for providing a firing force as part of a firing sequence from said ammunition round;

said control tube means including a first firing opening for providing an access to said propellant charge means from said axial cavity so that temperature and pressure conditions within said axial cavity adjacent said first firing opening can act on said propellant means thus providing for firing of said propellant charge means;

said first firing opening being positioned intermediate the axial ends of said control tube means;

said control tube means having a second firing opening circumferentially displaced from said first firing opening;



said control tube means including slotted means forward of said first firing opening for providing a communication path between said propellant charge and said axial cavity for reducing the pressure differential across said control tube means when said propellant charge is fired;

sealing means for separating said axial cavity into a forward portion and aft portion, said sealing means being conditionable between a first condition separating said primer means and said first firing opening thus providing a barrier between said primer means and said propellant means and a second condition permitting communication between said propellent means and said primer means through said firing opening;

said sealing means including a piston means positioned aft of said projectile means so that forward motion of said piston means within said axial cavity causes forward motion of said projectile means within said cavity; and

said piston means having a generally cylindrical outer shape, a rearwardly opening recess means for receiving a charge and a skirt means extending circumferentially around said piston means for obstructing the flow of combustion gases between said piston means and said control tube means.

4,197,802

LINKING MACHINES

Denis Matthews, Sutton-in-Ashfield, England, assignor to Mathbirk Limited, Sutton-in-Ashfield, England

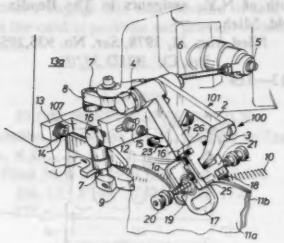
Filed Jun. 19, 1978, Ser. No. 916,747

Claims priority, application United Kingdom, Jul. 12, 1977, 29150/77

Int. Cl.[2] D05B *7/00, 27/00*

U.S. Cl. 112—27 **14 Claims**

1. In a linking machine having a plurality of radially extending points for implament of fabrics to be joined by a chain stitch, a fabric guide device for feeding fabric to the points whereby the fabric is impaled on the points so as to locate an edge of the fabric at a predetermined height relative to the points, said device including a support for attaching the device to the machine, fabric guide means carried by the support to guide the fabric to the points, said guide means including a moveable reference surface against which said fabric edge slidingly abuts as the fabric is guided to the points, said reference surface being operable to locate the fabric edge at the predetermined height relative to the points, and adjustment means for moving the reference surface selectively relative to the guide means.



4,197,803

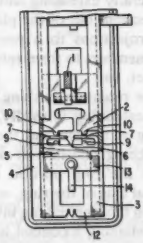
VISUAL AID IMPROVEMENT TO A PRESSER DEVICE FOR SEWING BUTTONHOLES

Walter H. W. Marsh, Fanwood, N.J., assignor to The Singer Company, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,795

Int. Cl.[2] D05B *3/24*

U.S. Cl. 112—77 **4 Claims**



1. A sewing machine having stitch forming instrumentalities, a buttonhole producing mechanism, an underbed work feed mechanism therein including a work engaging bar for transporting work fabric in a predetermined direction, a presser foot arranged in opposition to said work engaging bar, a work engaging shoe member, and means slidably supporting said shoe member for movement relative to said presser foot in a direction coincident to said predetermined direction of feed of said underbed work feed mechanism, an adjustable stop member, means for selectively locating said stop member on said shoe member at a predetermined distance from said presser foot such that said presser foot will come into abutting contact with said adjustable stop member upon reaching the end of the first leg of the buttonhole being sewn, wherein the improvement comprises:

a. a flexible finger having a free extremity and means at the opposite extremity rigidly attaching said flexible finger to said adjustable stop member; and

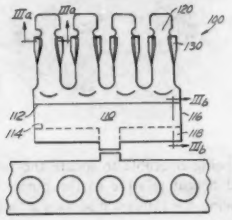
b. a protrusion on said presser foot located such that when said underbed work feed mechanism advances the work and thereby advances said work engaging shoe member sufficiently said protrusion will engage said flexible finger and deflect same for providing a visual indication that the end of the first leg of the buttonhole being sewn has been reached.

4,197,804

ELECTRICAL CONTACT RETENTION BUSHING METHOD OF MAKING

Herbert K. Uhlig, Bainbridge, and Clifford R. Waldron, Unadilla, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 21, 1978, Ser. No. 935,295
Int. Cl.[2] B21D *53/00*
U.S. Cl. 113—119 **5 Claims**



1. A method of making a bushing for retaining an electrical contact within an electrical connector, the steps of the method comprising:

stamping from flat stock a predetermined shape having an elongated base portion and a plurality of elongated members extending forwardly from the base, each of said members having laterally-extending projections located intermediate their length;

forming the base portion into a three-dimensional shape having two laterally extending shoulders;

forming the projections out of the plane of the members by bending the projections to a position extending transversely to the members to form retention tines adapted to engage a contact; and

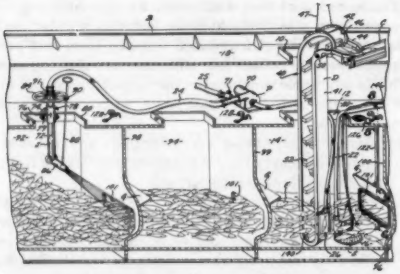
forming the entire retention bushing into a ring-like shape with the tines extending inwardly, the ends of the base portion meeting at a seam and the forwardly extending members each being shaped into an arcuate cross-section disposed about the ring portion to provide symmetry about the central axis of the ring, whereby a stamped and formed retention bushing having inwardly extending tines for releasably retaining a contact is made.

4,197,805

GATE APPARATUS FOR FISH UNLOADING SYSTEM

Mario J. Puretic, 259 6th Ave. North, Monte Cristo Isle, Tierra Verde, Fla. 33715

Division of Ser. No. 762,854, Jan. 27, 1977, Pat. No. 4,103,792. This application Apr. 17, 1978, Ser. No. 896,796
Int. Cl.[2] B63B *35/14*
U.S. Cl. 114—255 **6 Claims**



1. In a fishing boat construction that includes a main fish hold and an auxiliary fish hold separated by a bulkhead formed with a vertically extending access hatch, the improvement comprising:

a gate;

hinge means interconnecting the upper end of said gate and said bulkhead for initial vertical gate movement followed by upward pivotal gate movement away from said bulkhead said hinge means pivoting about a point between said gate and said bulkhead;

locking bracket means on said bulkhead below said hatch which receive the lower end of said gate to lock it against pivotal movement until said gate undergoes said vertical gate movement; and

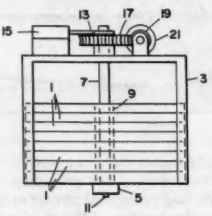
lifting means attached to said gate and extending upwardly out of the hold wherein is disposed said gate whereby said gate may be raised from the deck of said boat.

4,197,806

SELECTIVE WEIGHT RELEASE

Darryl E. Laxo, Novato, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 3, 1978, Ser. No. 921,393
Int. Cl.[2] B63G *8/14*
U.S. Cl. 114—331 **6 Claims**



1. A selective weight release mechanism for a submersible vehicle comprising:

(a) a plurality of vertically stacked weights, each of said weights having selectively predetermined composition and having a central bore therethrough, said weights having at least two selective values and independent of the keel of said vehicle;

(b) means for releasably holding said weights;

(c) means for rotating said holding means through a specific angle of rotation such that at least one of said weights is released upon actuation of said rotating means; and

(d) means for releasing said holding means and all of said weights when actuated.

4,197,807

COLLAPSIBLE TRAFFIC CONE MARKER

Bruce E. Campbell, Pittville Rte., McArthur, Calif. 96056

Filed Jun. 23, 1978, Ser. No. 918,591
Int. Cl.[2] E01F *9/01*
U.S. Cl. 116—63 P **2 Claims**

1. A collapsible portable traffic cone marker comprising:

a base of cylindrical configuration having an open top face,

a opening disposed along an edge of said open top face,

a resilient rib defining a spiral having one end placed in said opening, by selectively moveable means, said rib having a resilient memory which causes said rib to extend upwardly released by said moveable means, said resilient rib having a second end fixed in said base and defining a generally conical shape,

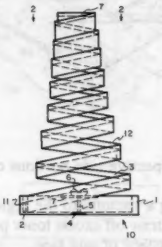
a reflector depending from and fastened to said rib along its entire length whereby when said rib is free standing, said reflector is deployed therewith and thereby forms a marker which allows air to pass therethrough,

said selectively moveable means is spaced from a bottom

face of said base for retaining said rib and reflecting portions in said base in which said selectively moveable means for retaining said rib and reflecting portions in said base comprises:

a horizontally disposed bar on the bottom face of said base,

said selectively moveable means including a vertically upstanding rod member fastened to said bar substantially at said bar's center and extending through said base having a threaded terminal portion above said base,



a substantially circular plate of said moveable means at a top most portion of said rib remote from said fixed one end, said plate having an elongate linear slit disposed therethrough,

and a wing nut threaded on said threaded terminal portion of said rod member,

whereby when said plate is pushed over said wing nut, through said slit, said wing nut can be rotated away from registry with said slit and said marker has been compressed for storage.

4,197,808

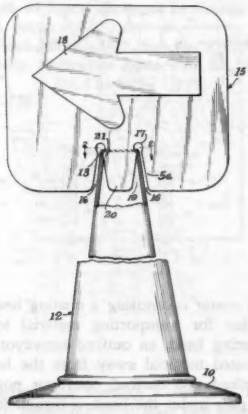
COMBINED ROAD MARKER AND INTERCHANGEABLE SIGN CARDS

James L. Kinninger, 991 - 6th St., Hermosa Beach, Calif. 90254

Filed May 8, 1979, Ser. No. 37,198

Int. Cl.[2] E01F *9/10*; G09F *7/02*

U.S. Cl. 116—63 C **5 Claims**



1. A base mounted, hollow bodied, frustro-conical road marker formed of a resilient material, having a circular aperture at its upper end;

a plurality of interchangeable informational sign cards, removably receptive of said road marker, having downwardly diverging slots extending partially across a selected one of said cards from one edge thereof;

an edge section intermediate said slots having a reduced lower end and a widened upper end such that when said edge section is inserted into said aperture, said aperture is distorted from its normally circular form to an elliptical configuration so as to cause the upper end of said marker to frictionally engage said edge section of said card so as to secure the card in position and prevent rotation from its set position.

4,197,809

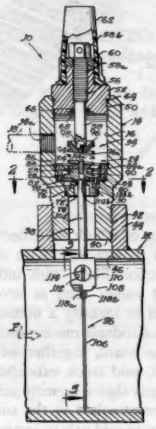
FLOW RESPONSIVE DEVICE

Dwight N. Johnson, Santa Ana, Calif., assignor to Textron, Inc., Providence, R.I.

Filed Nov. 27, 1978, Ser. No. 963,850

Int. Cl.[2] F16K *17/04*; G01F *1/28*

U.S. Cl. 116—275 **28 Claims**



1. A flow responsive device for use in a fluid flow system which includes a flow conduit adapted for fluid flow therethrough.

said device comprising housing means adapted for connection to said fluid flow conduit and defining a fluid pressure chamber therein adapted for connection to a source of fluid control pressure, said fluid pressure chamber being further adapted for flow communication with said flow conduit when said housing means is connected thereto.

valve means supported by said housing means in operative association with said pressure chamber and operable between a closed condition operative to prevent fluid communication between said pressure chamber and said flow conduit, when said housing means is connected thereto and an open condition operative to allow fluid communication between said pressure chamber and said flow conduit,

resilient means disposed within said pressure chamber and operatively associated with said valve means so as to selectively bias said valve means to its said closed condition,

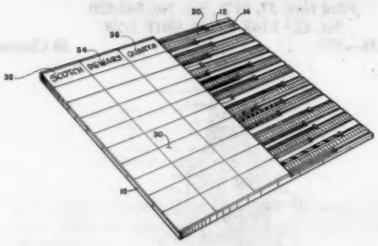
said valve means being adapted to also be biased to its said closed condition by a predetermined fluid control pressure introduced into said pressure chamber,

and flow detection means supported by said housing means in operative association with said valve means, said flow detection means being adapted for insertion within said flow conduit when said housing means is connected thereto,

said flow detection means being responsive to a predetermined fluid flow rate within said conduit to effect opening of said valve means when said control pressure in said pressure chamber is greater than the fluid pressure within said flow conduit, opening of said valve means being

operative to enable return of said valve means to its said closed condition at a flow rate within said conduit lower than said predetermined flow rate so as to prevent hunting of said valve means.

4,197,810
INVENTORY BOARD
Jacques C. LeMasson, 518 E. 80th St., New York, N.Y. 10021
Filed May 24, 1978, Ser. No. 909,028
Int. Cl.[2] G09F *9/00*
U.S. Cl. 116—323 **4 Claims**



1. An inventory board, comprising:

a board, a first section of which is formed with a surface on which a label can be attached, with said board formed with a second section fitted with indicating means to identify numerical values such as inventory quantities, wherein the means to identify a numerical value of the indicating means is a slidable marker movable in an undercut track along the board, together with a marker scale fixed to the board, said track extending in said second section along an axis that intersects said first section so that a label may be attached to the surface of said first section in proximity to said axis to serve as indentification means for the slidable marker, with the marker scale fixed on the said second section adjacent said track, wherein

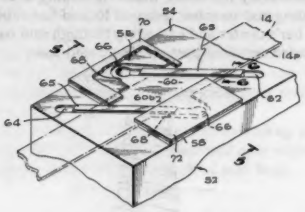
the board has a plurality of pairs of such tracks, each track fitted with a first or second selective movable marker, each having a pointer-like head portion and with a common marker scale located between each pair of said tracks serving as the indicating means, with said tracks and marker scales each oriented along parallel axes, one of said first and second markers pre-set to indicate a selected reference numerical quantity of an item, which item is an item of stock, and the other marker movable to indicate an actual numerical quantity of said item that is in stock at the present time, based on actual current sales and purchases of that item.

4,197,811
TONER APPLICATOR AND REMOVAL APPARATUS
Alfred M. Nelson, Redondo Beach, and David L. Davis, Venice, both of Calif., assignors to AM International, Inc., Los Angeles, Calif.
Division of Ser. No. 726,912, Sep. 27, 1976, abandoned. This application Jan. 30, 1978, Ser. No. 873,178
Int. Cl.[2] B05C *3/12, 3/18, 11/06, 11/10*
U.S. Cl. 118—50 **3 Claims**

1. In a toner-applying apparatus for applying toner to a tape along a tape path, the tape having a front face and a rear face, a tape cleaning device comprising:

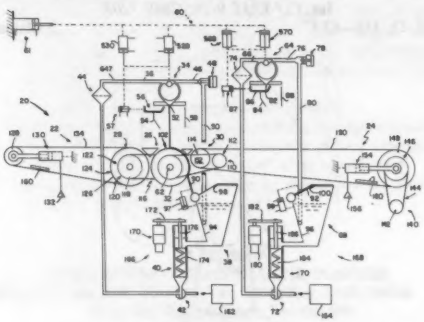
a tape-holding means having a base portion and paired guide members forming a tape-holding channel region therebetween, the base portion forming a bottom wall and the paired guide members forming cutaway side walls, said region extending along a portion of the length of said tape path for guiding said tape, said channel region having the cutaway side walls disposed at a predetermined location to form a widened channel location;

a pair of covers covering the sides of said channel region at said cutaway side walls thereof, each of said covers extending over respective side portions of the front face of said tape; and



means for applying a vacuum to the region under said covers, whereby to draw off excess toner particles at opposite sides of the front face of said tape.

4,197,812
CURTAIN COATER
A. Wiley Clayton, 1428 Maxwell La., Upland, Calif. 91786
Continuation-in-part of Ser. No. 728,336, Feb. 28, 1978, Pat. No. 4,075,976, which is a continuation-in-part of Ser. No. 448,017, Mar. 4, 1974, abandoned. This application Feb. 24, 1978, Ser. No. 881,126
Int. Cl.[2] B05C *5/00*
U.S. Cl. 118—323 **11 Claims**



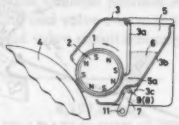
1. A curtain coater comprising a coating head, an infeed conveyor portion for transporting material to be coated toward the coating head, an outfeed conveyor portion for transporting coated material away from the head, a space between the infeed and outfeed conveyor portions across which articles pass under the head, a trough for collecting unused coating material, a roll for conveying articles across the space, a doctor blade movable between a first use position wherein it is held in contact with the roll for removing coating material therefrom and a second storage position covering the trough to close the trough to prevent volatile components from escaping from the coding material therein and includes means for moving said doctor blade between said first and second positions.

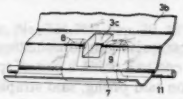
4,197,813

MAGNETIC BRUSH DEVELOPMENT APPARATUS WITH DEVELOPER SUPPLY DETECTING MEANS

Takashi Yano, and Mitsuo Shibusawa, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 30, 1978, Ser. No. 964,887
Claims priority, application Japan, Nov. 30, 1977, 52-144482
Int. Cl.² G03G *15/09*
U.S. Cl. 118—694 **6 Claims**





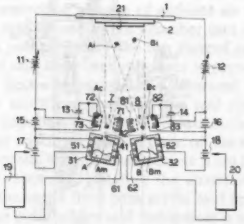
1. In a magnetic brush development apparatus in which a latent electrostatic image formed on a photoconductive material is developed by a magnetic brush formed on a development sleeve having a magnet therein by supplying one-component type magnetic developer to said development sleeve, the improvement wherein an outlet of a hopper for supplying said developer to said development sleeve is positioned in proximity to the surface of said development sleeve, and a developer detecting means comprising a light emitting element and a light receiving element for detecting the presence of said developer in said hopper is positioned in proximity to said outlet of said hopper and the surface of said development sleeve.

4,197,814

APPARATUS FOR FORMING COMPOUND SEMICONDUCTOR THIN-FILMS

Toshinori Takagi, Nagaokakyo, and Kiyoshi Morimoto, Mobara, both of Japan, assignors to Futaba Denshi Kogyo K.K., Chiba, Japan

Filed Jan. 17, 1978, Ser. No. 870,096
Claims priority, application Japan, Feb. 12, 1977, 52-14433
Int. Cl.² C23C *13/12*
U.S. Cl. 118—726 **2 Claims**



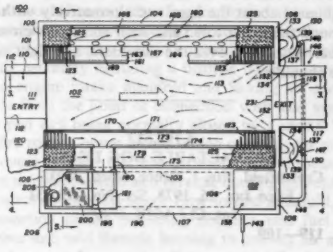
1. An apparatus for forming a thin-film of a compound semiconductor consisting of at least two elements on a substrate, which comprises a common vacuum container maintained at a first pressure level, a plurality of closed type crucibles for separately holding substances-to-be vaporized containing the component elements of said compound semiconductor and vaporizing said substances by heating to produce vapors thereof, said crucibles being provided in said vacuum container and each having at least one injection nozzle disposed opposite to said substrate, a plurality of temperature control sections for separately controlling the pressure of said vapors in said crucibles and maintaining said pressures at a second level higher than said first pressure level so that the vapors jetted from the injection nozzles of said crucibles respectively are subjected to supercooling as a result of adiabatic expansion through said nozzles to form clusters, said temperature control sections being provided in said vacuum container, a plurality of ionization chambers for ionizing said clusters, said ionization chambers being provided in said vacuum container and in the vicinity of the injection nozzles of said crucibles respectively, a plurality of acceleration power supplies provided between said substrate and respective ionization chambers for separately giving kinetic energy to the ionized clusters or cluster ions separately formed in said ionization chambers to make said cluster ions impinge on the surface of said substrate.

4,197,815

AQUATIC EXERCISE FACILITY FOR ANIMALS

Carl L. Brazelton, Bonfield, Ill., assignor to Stran Corporation, Bradley, Ill.

Filed May 30, 1978, Ser. No. 910,668
Int. Cl.² A01K *15/02*; A61D *11/00*
U.S. Cl. 119—29 **50 Claims**



1. An aquatic exercise facility comprising a container for a pool of water having an entry area and an exit area, at least a portion of said pool between said entry area and said exit area having a depth sufficient to require the user to swim thereacross, and means for establishing a current of water flowing from adjacent to both sides of said exit area toward said entry area through said deep portion and out past both sides of said entry area, whereby the user entering said pool at said entry area must swim across said deep portion and against the current to reach said exit area, thereby to exercise the user by causing the user to swim against the current flowing through said deep portion.

4,197,816

MULTI-PURPOSE HUMAN HARNESS

Charles Lusch, 805 Broadway Ave., Cardiff, N.J. 08232

Filed Apr. 7, 1978, Ser. No. 894,563
Int. Cl.² A62B *35/00*
U.S. Cl. 119—96 **5 Claims**

1. A multi-purpose human harness for climbing, rappelling, rescue and the like comprising:

a flexible belt adapted to extend circumferentially around the waist and alternatively around the upper torso of the wearer, said belt having means for adjusting its length, and having means for removably securing its ends together to form a closed loop;

a metal ring, and flexible means securing said ring to an intermediate location on said belt;

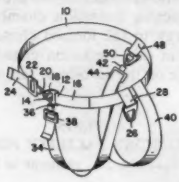
a first flexible strap secured at one of its ends to an intermediate location on said belt on one side of and adjacent the location to which said ring is secured;

a second flexible strap secured at one of its ends to an inter-

mediate location on said belt on the opposite side of and adjacent the location to which said ring is secured;

a pair of attachment means secured to said belt at locations such that the locations to which said flexible straps are secured to said belt are located between the locations to which said attachment means are secured;

means attached to each strap, at the end thereof opposite the end which is secured to the belt, adapted to be removably secured to either one of said attachment means; and



means on each strap for continuous adjustment of its length through a range such that the harness may be worn with said flexible belt around the waist and with said first and second straps extending uncrossed between the legs and tightened about the legs, and alternatively with said belt around the upper torso and with said straps crossing each other, extending over the shoulders, and tightened about the shoulders.

4,197,817

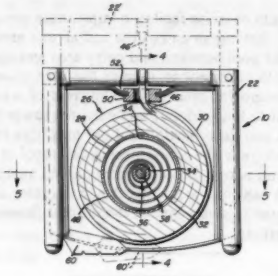
RETRACTABLE DOG LEASH

Billy G. Crutchfield, Rte. 1, Bruce, Mich. 38915

Filed Jun. 26, 1978, Ser. No. 918,831

Int. Cl.[2] A01K *27/00*

U.S. Cl. 119—109 **1 Claim**



1. A leash apparatus for storing a leash in a compact configuration, comprising: a leash, container means having a spool rotatably mounted therein, said spool being connected to one end of said leash; spring means attached to said spool so as to impart a torque to said spool to force said spool to rotate in a manner coiling said leash thereon; a wedge-shaped latch element slidably disposed in a slot in said container means and adapted to make a pressure tight detachable engagement with said spool so as to impart a torque to said spool which is equal to and opposite to the torque imparted by said spring means; a handle firmly secured to said leash at the opposite end thereof, said handle including pivotable sections capable of folding for making said handle conform to the shape of at least a portion of the periphery of said container means to provide for convenient storage of said handle; and a groove disposed about a portion of the periphery of said container means for receiving said handle therein.

4,197,818

PET WALKER

Jimmy Cowan, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of, New York, N.Y. 10007

Filed Nov. 25, 1977, Ser. No. 854,583

Int. Cl.[2] A01K *3/00*

U.S. Cl. 119—117 **1 Claim**

1. A pet walker, comprising in combination, a vertical prong tapered at its lower end to a point, a pair of spaced metal straps pivotally mounted on said prong, said straps being secured to a flat plate parallel to said prong, said plate being contoured and having a pictoral figure to depict a person holding an animal leash, and including a space for additional writing and drawing thereupon, said plate including a ring to which an animal leash may be tethered, said ring being so located relative to the depicted person to simulate a leash held by said person wherein said ring is movably mounted including means for resiliently resisting movement of said ring relative to said plate wherein said ring is mounted in a slot in said plate including flanges to retain said ring in said slot.

4,197,819

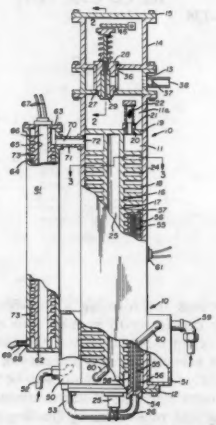
HOT FUEL GAS GENERATOR

Fred G. Mahoney, Pittsburgh, Pa., and Webster B. Harpman, Poland, Ohio, assignors to Econo Fuel Systems, Inc., Latrobe, Pa.

Continuation-in-part of Ser. No. 762,101, Jan. 24, 1977, Pat. No. 4,145,998, which is a continuation-in-part of Ser. No. 710,195, Jul. 30, 1976, Pat. No. 4,050,419. This application Nov. 29, 1978, Ser. No. 964,644

Int. Cl.[2] F02B *43/00*

U.S. Cl. 123—25 B **8 Claims**



1. A generator for producing hot fuel gas for an internal combustion engine having an intake manifold, a throttle valve

therefore, an accelerator and linkage connecting said accelerator to said throttle valve; said generator comprising a closed pressure vessel, a heat exchanger in said vessel, heating means in said heat exchanger, fins on said heat exchanger, said fins extending to the walls of said pressure vessel and having staggered openings in said fins to form a passageway, means for continuously injecting a predetermined amount of a liquid hydrocarbon into said pressure vessel, a valve positioned in an opening in said pressure vessel, means establishing communication between said valve and said intake manifold, means for moving said valve from a closed position to an open position, said means for moving said valve connected to said linkage and arranged to move said valve simultaneously with said throttle valve.

4,197,820

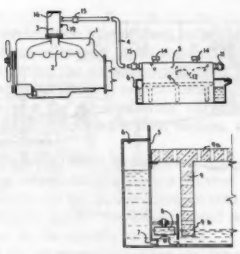
METHOD AND APPARATUS FOR SUPPLYING FUEL TO AN INTERNAL COMBUSTION ENGINE

Roger Trudel, 1616 First Ave., Val Caron POM 3AO Ontario, Canada

Continuation of Ser. No. 724,708, Sep. 20, 1976. This application May 26, 1978, Ser. No. 909,783

Int. Cl.[2] F02B *69/00*

U.S. Cl. 123—34 R **7 Claims**



1. A method for supplying fuel to an internal combustion engine by means of an enclosed vapor chamber connected to the engine manifold, said vapor chamber being internally divided into a lower fuel section and an upper vapor section by an intervening absorbent vaporizer which contacts liquid fuel provided to said lower fuel section which includes the steps of providing only liquid fuel to said fuel section below said vaporizer to maintain a shallow level of liquid fuel in said lower fuel section, storing fuel vapor formed from said liquid fuel by said vaporizer in the upper vapor section above said vaporizer, admitting only a controlled volume of ambient air through a single inlet at one side of said vapor chamber into said upper vapor section at a point adjacent the top thereof and remote from the surface of said absorbent vaporizer to prevent the air so admitted from becoming excessively saturated with fuel, causing said air to move completely across said upper vapor section above the vaporizer to a single remote outlet adjacent the top of the upper vapor section at a point on the side of said vapor chamber opposite said inlet and remote from the surface of said absorbent vaporizer, agitating the airstream substantially throughout the entire flow path across said upper vapor section between the point where said ambient air is admitted to said upper vapor section and the remote outlet to equalize any stratification of vapors, and conducting a vapor fuel-air mixture from the outlet to the engine intake manifold under the influence of the engine suction.

2. A fuel supply system for an internal combustion engine comprising in combination with an engine and its intake manifold:

(a) a source of liquid fuel,

(b) a fuel vapor chamber including an enclosed housing, a vaporizer of absorbent material mounted within said enclosed housing and having a main body portion comparable in area to the horizontal cross-section of the enclosed housing, the main body portion being mounted to divide the interior of said enclosed housing into a lower fuel section and an upper vapor section above said fuel section, said vaporizer having portions in contact with liquid fuel in said lower fuel section when fuel is admitted thereto, fuel inlet means in the lower portion of said housing to supply only liquid fuel to said lower fuel section from said liquid fuel source, a single air inlet means formed on one side of said enclosed housing, said air inlet means being positioned adjacent the top of said upper vapor section at a point remote from the surface of said vaporizer main body portion to admit only air to said upper vapor section and to prevent the air so admitted from becoming excessively saturated with fuel, air outlet means formed on the side of said enclosed housing opposite said air inlet means, said air outlet means being positioned adjacent the top of said upper vapor section at a point remote from the surface of said vaporizer main body portion to convey air and entrained vapors from said upper vapor section, said air inlet and outlet means operating to create airflow completely across the extent of said upper vapor section, and baffle means mounted in the path of the airflow across said upper vapor section between said air inlet means and outlet means to agitate the air substantially throughout the entire flow path between said air inlet means and air outlet means to equalize any stratification from vapors,

(c) a throttle assembly connected to control the flow of air and entrained vapors to said engine intake manifold, said throttle assembly including a throttle housing connected to the engine intake manifold and having an open end remote from the point of connection with said manifold, said open end being normally closed by a spring loaded backfire release cover means which opens under pressure to prevent a vapor fuel line explosion, and throttle valve means mounted within said throttle housing and operative to control the air and vapor flow to said manifold, and

(d) connection means extending between said fuel vapor chamber and said throttle housing to convey air and entrained vapors from said outlet means to the interior of said throttle housing at a point above said throttle valve means.

4,197,821

DEVICE FOR CONTROLLING VACUUM ADVANCING OF IGNITION TIMING

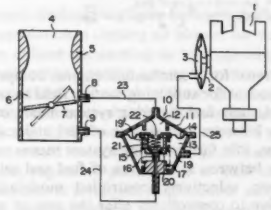
Daisaku Sawada; Takashi Shigematsu, and Yuji Takeda, all of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Aug. 25, 1977, Ser. No. 827,707

Claims priority, application Japan, Aug. 31, 1976, 51-104610

Int. Cl.[2] F02P *5/10*

U.S. Cl. 123—117 A **2 Claims**



1. A device for controlling the vacuum advance of ignition timing in an internal combustion engine, comprising a vacuum advancer having a diaphragm chamber connected to advance the ignition timing in accordance with the vacuum supplied to said diaphragm chamber, an intake passage means having a throttle valve, a first intake vacuum port in said intake passage

means located so as to be at the upstream side of said throttle valve when said throttle valve is fully closed and at the downstream side of said throttle valve when said throttle valve is slightly opened, and a second intake vacuum port in said intake passage means located at the downstream side of said throttle valve, a diaphragm valve having a housing, a diaphragm in said housing defining first and second diaphragm chambers, a spring biasing said diaphragm toward said first diaphragm chamber, a valve element operated by said diaphragm, a valve port normally open to said second diaphragm chamber and positioned so as to be closed by said valve element when said diaphragm is biased for a predetermined amount from its normal position toward said second diaphragm chamber by a predetermined difference between the pressures in said first and second diaphragm chambers against the biasing force exerted by said spring, said predetermined pressure difference being a fraction of the intake vaccum in idling operation of the engine, and an air bleed port connecting said first and second diaphragm chambers which is normally closed by said valve element and is opened when said diaphragm is biased beyond said predetermined amount from its normal position toward said second diaphragm chamber due to increase of the pressure difference between said first and second diaphragm chambers beyond said predetermined pressure against the biasing force exerted by said spring, the air bleed into said second diaphragm chamber through said air bleed port reducing the pressure difference between said first and second diaphragm chambers, a first passage means connecting said first diaphragm chamber with said first intake vacuum port, a second passage means connecting said valve port with said second intake vacuum port, and a third passage means connecting said second diaphragm chamber with said diaphragm chamber in said vacuum advancer.

4,197,822

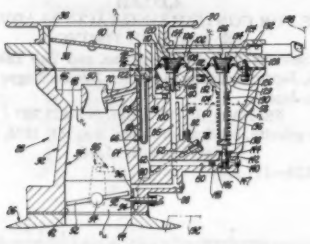
CIRCUIT MEANS AND APPARATUS FOR CONTROLLING THE AIR-FUEL RATIO SUPPLIED TO A COMBUSTION ENGINE

Chong L. Tsiang, Utica, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Feb. 14, 1977, Ser. No. 768,181

Int. Cl.² F02M *11/00*

U.S. Cl. 123—119 EC **42 Claims**



1. A carburetor for a combustion engine, comprising induction passage means for supplying motive fluid to said engine, a source of fuel, main fuel metering system means communicating generally between said source of fuel and said induction passage means, idle fuel metering system means communicating generally between said source of fuel and said induction passage means, selectively controlled modulating valving means effective to controllably alter the rate of metered fuel flow through each of said main fuel metering system means and said idle fuel metering system means, and electrical circuit means effective for sensing the oxygen content within the exhaust gases of said engine and in response thereto controlling said valving means, said electrical circuit means comprising oxygen sensor means effective for sensing the relative amount of said oxygen in said exhaust gases and producing in response thereto an electrical output signal, means for comparing said output signal to a preselected reference value, amplifier means for amplifying any difference as between said preselected value and said output signal and for producing an electrical control signal effective for controlling said modulating valving means.

4,197,823

SUPPLEMENTARY AIR VALVE FOR A FUEL SUPPLY APPARATUS

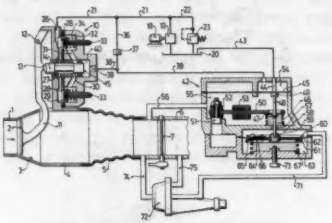
Reinhard Schwartz, and Peter Schelhas, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

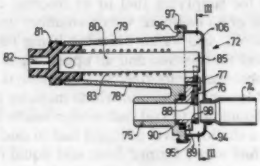
Filed Nov. 27, 1978, Ser. No. 963,711

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 2755455

Int. Cl.² F02M *7/00*

U.S. Cl. 123—119 D **5 Claims**





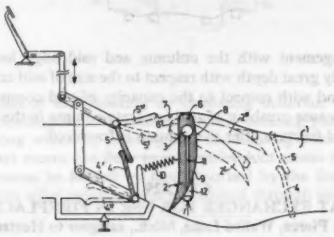
1. In a fuel supply apparatus for internal combustion engines having an induction tube and a throttle valve arranged in said induction tube and a lateral channel which bypasses said throttle valve, the improvement which comprises a supplementary air valve arranged in said lateral channel and further including a bimetallic spring, a flat vane provided with a flow-through aperture, said vane being pivotable about a shaft which is eccentrically situated with respect to said flow-through aperture by means of said bimetallic spring, an electric heating coil disposed about said bimetallic spring which can be switched on together with the ignition of said internal combustion engine to heat said bimetallic spring for pivotal movement of said vane by said bimetallic spring, two air supply tubes having cross-sectional areas arranged coaxially opposite and at a distance from each other and which are part of said lateral channel said vane being further arranged to partially uncover said cross-sectional areas of said two air supply tubes, at least one further pressure control line having a cross-sectional area and further wherein said vane is provided with means to open more or less widely said cross-sectional area of said at least one further pressure control line.

4,197,824

FUEL INJECTION SYSTEM

Siegfried Holzbaur, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 562,859, Mar. 27, 1975, Pat. No. 4,079,718. This application Mar. 7, 1978, Ser. No. 884,315
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1974, 2415182
The portion of the term of this patent subsequent to Mar. 21, 1995, has been disclaimed.
Int. Cl.[2] F02M *39/00*
U.S. Cl. 123—139 AW **8 Claims**



1. In the combination comprising: an air suction tube of an internal combustion engine; an air measuring valve; mounting means for mounting the air measuring valve in the air suction tube; and biasing means, the suction tube defining an air flow cross section and the air measuring valve providing a controlled flow of air through the flow section, the improvement wherein:

the air measuring valve is mounted eccentrically by said mounting means within the air suction tube for pivotal displacement by the air flow drawn into the suction tube by the engine against the force exerted on the air measuring valve by the biasing means; and

one end of the air measuring valve and the suction tube have curved cooperating surfaces relatively dimensioned so that the flow cross section in the region of the air measuring valve is closed by the air measuring valve under the force of the biasing means during periods when the air flow ceases, is gradually opened at the other end of the air measuring valve by an impedance induced force as a function of the pressure difference prevailing on both sides of the air measuring valve, and is further opened at said one end of the air measuring valve as the air flow increases through the opening at said other end.

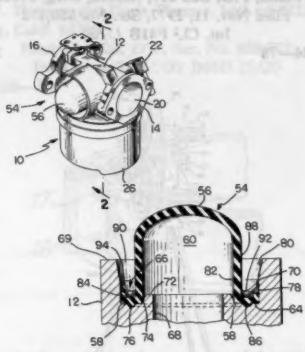
4,197,825

PRIMER BULB RETAINER

Alan B. Altenbach, Cedarburg, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 25, 1977, Ser. No. 854,815
Int. Cl.[2] F02M *1/16*
U.S. Cl. 123—187.5 R **10 Claims**

1. In a carburetor comprising a body having a throat and a fuel inlet passage formed therein, a fuel reservoir, valve means for admitting fuel from said fuel inlet to said reservoir, means forming a second passage communicating with said reservoir and having an end extending into said throat for admitting fuel thereto from said reservoir means forming a third passage communicating with said second passage, and a manually compressible bulb communicating with said third passage whereby compression of said bulb displaces air therefrom through said third and second passages, thereby forcing a priming charge of fuel from said second passage into said throat; the improvement comprising a member forming an integral part of said body and having an outer surface with a cavity formed therein defined by an annular side wall and a bottom wall, said bottom wall having an annular shoulder spaced from said side wall and defining an annular groove therewith, said bulb having a central dome portion joined to an annular flange portion, said bulb being positioned in said cavity with a substantial compressible portion of said bulb being surrounded by said cavity side wall so as to protect said bulb, and with said annular flange portion seated in said annular groove whereby said dome defines an annular slot with said



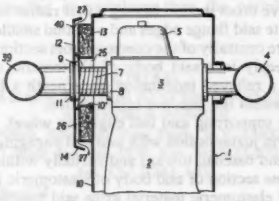
side wall, and an annular sealing member in said annular slot engaging said annular flange portion, said sealing member having means thereon for frictionally engaging said side wall thereby retaining said annular flange portion in sealing engagement with said annular groove, said third passage communicating with the interior of said dome through said bottom wall.

4,197,826

INTERNAL COMBUSTION ENGINE HAVING A NOISE-SUPPRESSING ENCAPSULATION

Heinz Fachbach; Gerhard Thien, and Karl Kirchweger, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Oct. 16, 1978, Ser. No. 951,632
Claims priority, application Austria, Oct. 28, 1977, 7713/77
Int. Cl.[2] F02B *77/00*; F01P *1/02*
U.S. Cl. 123—198 E **6 Claims**



1. An internal combustion engine having a spaced noise-suppressing encapsulation, a cooling air blower for ventilating the encalsulation, at least one cooling air inlet opening and at least one cooling air outlet opening arranged in the encapsulation, and an exhaust pipe connected to the engine by means of at least one body-resonance-absorbing compensator located at least partially within the encapsulation, wherein said compensator penetrates said encapsulation, without touching it, and wherein in the region of penetration at least one plate-like absorption silencer is arranged, said silencer surrounding the compensator thereby leaving a gap between itself and the compensator and being of angular design and arranged substantially within a plane perpendicular to the compensator axis, the silencer comprising a cover attached to the exhaust pipe and at least one wall partition, said cover and said wall partition defining a disc-like first annular gap therebetween, said gap being in communication with the interior of the encapsulation, the gap between the cover and the wall partition being at

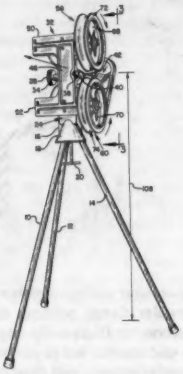
least partially lined with sound absorbing-material leaving a passage for the cooling air.

4,197,827

COACTING WHEEL BALL PROJECTING DEVICE

Tommy L. Smith, P.O. Box 517, Aurora, Oreg. 97002

Filed Nov. 11, 1977, Ser. No. 850,472
Int. Cl.² F41B *15/00*
U.S. Cl. 124—78 **14 Claims**



1. A ball pitching machine comprising:
at least one motor-driven, rotatable, ball engaging wheel for pitching a baseball tangentially of said wheel,
the circumference of said ball engaging wheel including a body of elastomeric material, said body being formed with a peripheral groove providing a concave cross section in said body extending circumferentially around the perimeter of said wheel for receiving said baseball and channeling the trajectory of said baseball as said wheel rotates to pitch said baseball,
said body of elastomeric material including flange edges on either side of said concave cross section,
said concave cross section having a first radius of curvature proximate said flange edges and a second smaller radius of curvature centrally of the concave cross section extending more deeply into said body of elastomeric material to provide a relieved indentation underneath a baseball received within the concave cross section,
a stand for supporting said ball engaging wheel,
and means in juxtaposition with said ball engaging wheel for urging said baseball toward and partially within said concave cross section of said body of elastomeric material so that said elastomeric material grips said baseball.

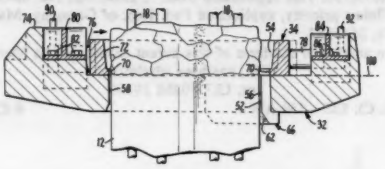
4,197,828

APPARATUS FOR CUTTING CONCRETE COLUMNS

Verne L. Schellhorn, Concord, Calif., assignor to Aerial Industrial Inc., Concord, Calif.

Continuation-in-part of Ser. No. 726,272, Sep. 24, 1976, abandoned. This application May 12, 1978, Ser. No. 905,354
Int. Cl.² B28D *1/32*
U.S. Cl. 125—23 C **15 Claims**

1. Apparatus for cutting a concrete column having reinforcing tendons therein, said apparatus comprising: an anvil having a surface conformed to embrace one side of the column; a shear having an edge conformed to embrace the side of the column opposite that embraced by the anvil, said edge being disposed in a plane parallel and closely adjacent to the plane defined by the surface of the anvil; means mounting the anvil and shear for guided movement relative to one another into, and out of, embracing engagement with the column; compression means to forcibly move the anvil and shear relative to one another to fracture and crush the column; said edge being of sufficiently limited depth with respect to the capacity of said compression means and with respect to the size of said concrete column to cause fracturing through said column as said edge is driven



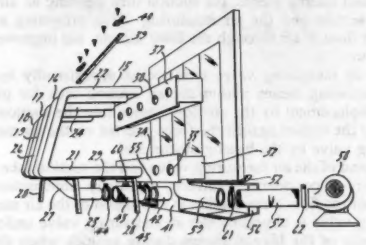
into engagement with the column; and said edge having a sufficiently great depth with respect to the size of said concrete column and with respect to the capacity of said compression means to cause crushing of said concrete column in the region above said fracture after the column is fractured.

4,197,829

HEAT EXCHANGER FOR USE IN FIREPLACE

Jeffrey D. Pierce, Walled Lake, Mich., assignor to Heatco, Inc., Hartford, Conn.

Filed Jun. 29, 1978, Ser. No. 920,263
Int. Cl.² F24B *7/00*; F24C *15/10, 15/36*; F23H *13/00*
U.S. Cl. 126—121 **12 Claims**



1. A fireplace heat exchanger comprising a plurality of parallel C-shaped tubes capable of supporting logs, a lower header connected to the lower ends of said tubes, a blower connected to said header for drawing room air into the header and through the tubes, an upper header connected to the upper ends of said tubes, a return tube having a main portion shaped similarly to said C-shaped tubes and having its upper end connected to said upper header for receiving heated air delivered to the upper header by said C-shaped tubes, means delivering said air from the lower end of said return tube to the room, and a platform at the level of said lower return tube end adapted to support the lower edge of a fireplace screen.

4,197,830

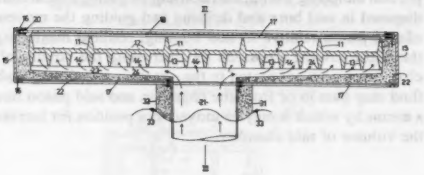
SOLAR HEATERS

William J. Wilson, 136 Cockburn St., Masterton, New Zealand

Filed Oct. 27, 1977, Ser. No. 845,976
Int. Cl.² F24J *3/02*
U.S. Cl. 126—430 **20 Claims**

1. A solar heat absorber comprising:
a housing having a translucent cover;
a heat exchanger panel located within said housing;
inlet and outlet duct means coupled to said housing, whereby air can respectively enter and leave said housing, said heat exchanger panel having a first surface which faces said cover and a second surface on the opposite side thereof, said first surface having a grid-like pattern of upstanding intersecting walls with at least one of said

walls being of a height which is greater than the other walls, said wall of greater height reaching substantially to the said translucent cover so as to restrain air currents near the said cover, and said second surface having a number of parallel spaced-apart walls extending therefrom, said heat exchanger panel being separated from the



walls of said housing by insulating material, the walls extending from the second surface defining passageways along which air entering into said housing from said inlet duct means can flow to said outlet duct means and in the process be heated by heat absorbed by the first surface from solar radiation and transferred through said panel.

4,197,831

ENERGY CONVERSION SYSTEM

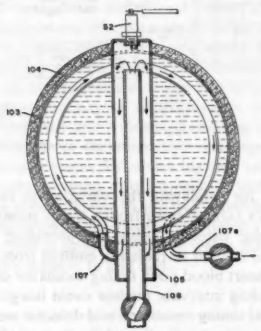
Robert B. Black, 2925 Denver St., Corpus Christi, Tex. 78404

Continuation of Ser. No. 620,327, Oct. 7, 1975, abandoned, and a continuation-in-part of Ser. No. 568,700, Apr. 16, 1975, abandoned, which is a continuation of Ser. No. 369,084, Jun. 11, 1973, abandoned, said Ser. No. 620,327, is a continuation of Ser. No. 462,094, Apr. 18, 1974, Pat. No. 4,025,291, which is a division of Ser. No. 192,262, Oct. 26, 1971, Pat. No. 3,844,270.

This application Jul. 7, 1977, Ser. No. 813,667

Int. Cl.[2] F24H *1/20*

U.S. Cl. 126—360 R **6 Claims**



1. Equipment for heating a liquid comprising a tank for a body of the liquid to be heated, an assembly of inner and outer spaced tubes providing an annular combustion chamber therebetween, the outer tube being in heat exchange relation to the liquid in the tank, the inner tube having an inlet end extended beyond the outer tube for receiving a supply of a mixture of a gaseous fuel and air, the other or outlet end of the inner tube communicating with said annular combustion chamber, ignition means adjacent the intercommunicating ends of the inner and outer tubes, thereby providing for combustion of the fuel in the annular combustion chamber, the inner tube having extended surface area within the outer tube in heat exchange relation with the annular combustion chamber providing for preheating of the fuel air mixture in the inner tube between the ignition means and the inlet end of the inner tube and an exhaust duct connected with the annular combustion chamber toward its end adjacent to the inlet end of the inner tube, said exhaust duct having extended surface area in heat exchange relation with the liquid in the tank, and said exhaust duct having a discharge end delivering exhaust gas externally of the body of liquid in the tank.

4,197,832

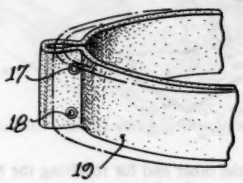
BAKING PAN INSULATOR

William J. Thomas, and Doris Thomas, both of 7521 Otto St., Downey, Calif. 90240

Filed Mar. 20, 1978, Ser. No. 888,307

Int. Cl.[2] A47J *27/00*; B65D *25/20*

U.S. Cl. 126—390 **1 Claim**



1. A device for reducing the tendency of the sides of a cake to rise non-uniformly with the top of the cake during baking, said device comprising:

a baking pan;

a water absorbent band of material, said band surrounding the outer surface of said baking pan, said band being capable of holding sufficient water to cool the sides of said pan during baking, said band being formed in a unitary ring and further being elastically stretchable to maintain tension against said outer surface;

at least one pair of snap means affixed to said water absorbent band and each element of the pair being positioned about three inches apart from each other, said pair of snap means comprising a male half and a female half positioned on the outer surface of the band whereby when said halves are joined a loop is formed in the band and the effective peripheral size of the band is reduced; and

said ring in its relaxed configuration detached from said pan being smaller in periphery than the periphery of said baking pan.

4,197,833

SOLAR COLLECTOR SYSTEM USING SLATE ABSORBER PANELS

James D. Pelish, Box 165, West Park, N.Y. 12493

Filed Jan. 30, 1978, Ser. No. 873,127

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—432 **2 Claims**

1. A solar collector system comprising:

a frame having a base, upwardly extending side portions and end caps,

a plurality of slate absorber members mounted within the frame in a shingle-like overlapping assembly,

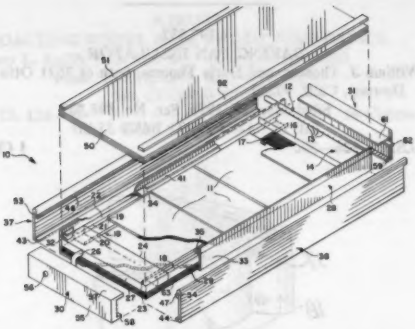
a glass panel mounted to the upwardly extending portions of the side frame and to the end caps mounted at either end of the frame,

a side frame member adapted to fit over each of the upwardly extending side portions and hold the glass panel in place, said side frame members comprising a lower flange which engages the base of the frame and an inwardly projecting flange at the upper portion thereof which engages and holds the glass panel in place,

a pair of side channels each mounted along a respective internal side of the frame in engagement with the side portions thereof, said side panels preventing leaking of the fluid by feeding it to the collector.

means for introducing a fluid onto the outermost slate panel

at one end wherein the fluid flows downwardly over the overlapping slate members and is heated thereby, and,



a collector at the other end for receiving the heated fluid after it flows over the slate members.

4,197,834

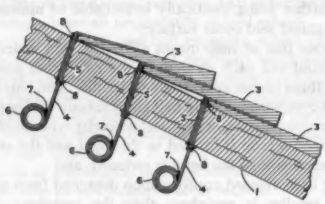
SOLAR ENERGY COLLECTOR AND ASSOCIATED METHODS ADAPTED FOR USE WITH OVERLAPPED ROOF SHINGLES ON THE ROOF OF A BUILDING

Robert L. Nevins, 12 Franklin Rd., Great Neck, N.Y. 11024

Filed Apr. 14, 1978, Ser. No. 896,470

Int. Cl.[2] F24J *3/02*; E04D *1/00*; F28F *1/32*

U.S. Cl. 126—442 **7 Claims**



6. A method of collecting solar energy comprising absorbing heat in roof shingles exposed to the sun, transmitting the heat from the roof shingles to thin metal plates interposed between the shingles in heat transfer relation therewith, said plates extending through the roof into the interior thereof via slits provided in said roof and transferring the heat in the plates to a fluid in a pipe around which one end of the plates is wrapped.

4,197,835

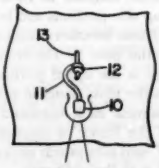
PROSTHETIC URINARY SPHINCTER CONTROL DEVICE

Robert H. Reinicke, Mission Viejo, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Mar. 9, 1978, Ser. No. 884,863

Int. Cl.[2] A61B *17/00*; A61F *1/00*

U.S. Cl. 128—1 R **10 Claims**



1. A device for controlling flow of fluid to and from a prosthetic urinary sphincter cuff, said device comprising a housing of rigid material, a piston of rigid material within the housing and movable relative thereto, said rigid piston and rigid housing defining a variable volume chamber for receiving fluid, said piston including a portion extending through said rigid housing and through said variable volume chamber, said piston portion including a bore, said housing including a stem slidably disposed in said bore and defining and guiding the movement of said piston relative to said housing, resilient means urging the piston toward a position for decreasing the volume of the chamber, a port connected to the chamber and through which fluid may pass to or from the chamber, and said piston having a means by which it may be moved to a position for increasing the volume of said chamber.

4,197,836

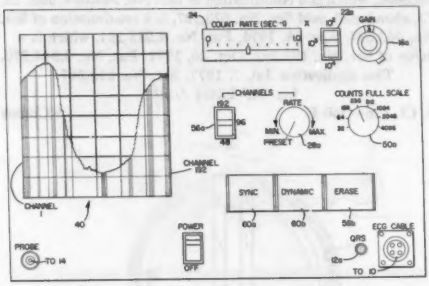
NUCLEAR CARDIAC BLOOD VOLUME DETECTING APPARATUS

Henry N. Wagner, Baltimore, Md., and Robert H. Wake, Warrensville Heights, Ohio, assignors to Bios Inc., Valhalla, N.Y.

Continuation of Ser. No. 629,521, Nov. 6, 1975, abandoned. This application Jan. 25, 1978, Ser. No. 872,069

Int. Cl.[2] A61B *6/00*

U.S. Cl. 128—654 **13 Claims**



1. A system for displaying the variation in radioactivity within a patient's cardiac cycle from a tracer substance in the blood comprising: detector means for providing an output indicative of the amount of radiation emitted from a selected location in the heart blood pool; timing means for determining successive sampling intervals; nuclear event integrator means responsive to said timing means and said detector means output for producing an output indicative of the amount of said radiation detected in each successive sampling interval; addressable N channel cumulative memory means for accumulating a representation of the total amount of radiation indicated by said integrator means for every nth sampling interval in a corresponding one of N memory channels; heart beat responsive means for generating a synchronizing pulse at the patient's heart rate; memory channel addressing means responsive to said timing means and said heart beat responsive means for incrementing the input channel address for said memory means with each sampling interval in a repeating sequence of N predetermined channel addresses in which each successive sequence is initiated by said synchronizing digital pulse; and means for displaying simultaneously the contents of all N channels of said memory means in the format of N adjacently spaced visible indicia each having a height above a common axis according to the current cumulative total represented in the corresponding memory channels respectively.

4,197,837

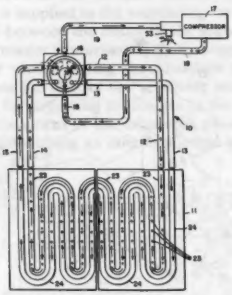
INFLATABLE-DEFLATABLE PAD AND AIR CONTROL SYSTEM THEREFOR

Richard C. Tringali, Manitowoc; William D. Christoffel, Two Rivers, and Paul R. Zeman, Manitowoc, all of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Continuation of Ser. No. 839,371, Oct. 4, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,502

Int. Cl.[2] A61H *1/00*

U.S. Cl. 128—33 **42 Claims**



1. An inflatable pad and air control system comprising a pad having top and bottom walls defining a first inflatable passage extending substantially the full width and length of said pad and having its ends disposed adjacent opposite ends of said pad, said pad also having a second inflatable passage extending substantially the full width and length of said pad and having its ends disposed adjacent opposite ends of said pad, said first and second passages being interlaced and said pad being provided with perforations in said top wall communicating with each of said passages for the upward escape of air therefrom when said passages are inflated, a source of air under pressure, control valve means connected to said source of air, said control valve means including a valve body having four openings therein and a valve member movable in relation to said body for successively directing air under pressure through each of said four openings, conduit means connecting the ends of said inflatable passages to the respective openings of said valve body, and power means for advancing said valve member to direct air under pressure through each of said openings and through said conduit means to said pad, whereby, as said valve member is advanced, each passage is inflated alternately from its opposite ends to produce inflation waves traveling in opposite directions relative to said pad.

4,197,838

BIRTHING BATH

Wilson T. Shill, 2000 E. Southern Ave., Tempe, Ariz. 85282

Filed Oct. 30, 1978, Ser. No. 955,885

Int. Cl.[2] A61H *37/00*; A47K *3/12*

U.S. Cl. 128—66 **9 Claims**

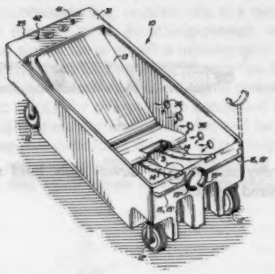
1. A birthing bath comprising:

a tub for containing warm water for soothing a woman in labor,

a track mounted in said tub and extending longitudinally thereof,

a reclining platform mounted on said track for movement therealong,

means for moving said platform from a first position in said tub wherein a woman reclining on said platform would have her lower extremities submerged in the water in said tub to a second position where her lower extremities are moved out of the water, and



catch means for holding said platform in said second position.

4,197,839

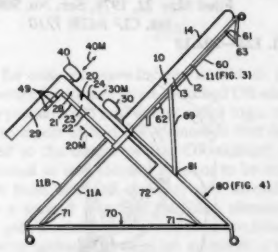
PASSIVE EXERCISE APPARATUS

Kenneth G. Lay, 25 Homer Ave., Cambridge, Mass. 02138

Continuation-in-part of Ser. No. 716,125, Aug. 20, 1976, Pat. No. 4,067,326. This application Jan. 9, 1978, Ser. No. 867,823

Int. Cl.[2] A61F *5/00*

U.S. Cl. 128—69 **4 Claims**



1. Passive exercise apparatus comprising,

means defining first and second elongated vertically oriented passive exercise elements of at least two inches width at right angles to each other and constructed to seat a person along both elements at once,

means for adjusting the angle of such elements relative to horizontal for adjusting degree of difficulty of usage,

each such element having a width no more than a narrow mid-section of an adult human back.

4,197,840

PERMANENT MAGNET DEVICE FOR IMPLANTATION

Alexander Beck, Forrigel; Jean-Marcel Piffaretti, Rufenacht, and Dietmar Weinmann, Nussbaumen, all of Switzerland, assignors to BBC Brown Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 29, 1976, Ser. No. 727,654

Claims priority, application Switzerland, Nov. 6, 1975, 14342/75

Int. Cl.[2] A61F *5/01*

U.S. Cl. 128—76 R **14 Claims**

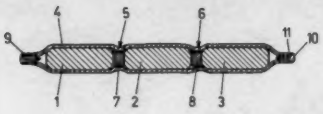
1. A permanent magnet device adapted for implantation in the eyelids comprising:

at least two magnet bodies;

at least one spacer arranged between the magnet bodies; and

a separate enveloping body of ductile, tissue-compatible material enclosing and clinging to the magnet bodies, said

enveloping body also enclosing said at least one spacer and having at least one constriction in the radial direction located at each of said at least one spacer;



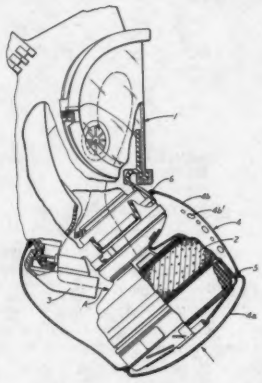
whereby said magnet device may hold said eyelids in a desired position.

4,197,841

RESPIRATOR WITH PROTECTIVE COVER

Lothar Brauer, and Klaus Pampuch, both of Berlin, Fed. Rep. of Germany, assignors to Auergesellschaft GmbH, Berlin, Fed. Rep. of Germany

Filed May 22, 1978, Ser. No. 908,094
Int. Cl.[2] A62B 7/10
U.S. Cl. 128—202.13 **5 Claims**



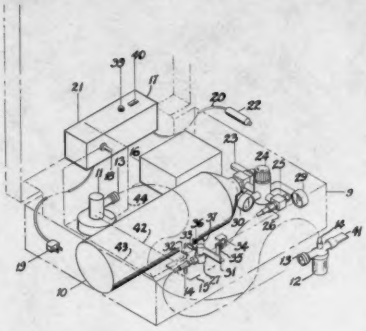
1. The combination with a respiratory protection device in the form of a mask provided with an exposed exhalation valve and an exposed intake conduit member through which air is conducted into the mask, of a protective cover for said member and valve comprising a protective bag containing them and having an end opening receiving the portion of the mask surrounding them, a flexible collar engaging the bag around said opening and sealing the bag against said mask portion, said conduit member having an inlet portion for receiving air from outside the bag, and a second flexible collar engaging the bag and sealing it against said inlet portion, the bag being provided with air outlets located remotely of said valve, said air outlets being isolated by said second collar from said conduit member inlet portion, and said exhalation valve being positioned to discharge exhaled air into the bag remotely from said outlets to warm said conduit member and valve when said device is used in a cold atmosphere.

4,197,842

PORTABLE PULMONARY RESPIRATOR, INTERMITTENT POSITIVE PRESSURE BREATHING MACHINE AND EMERGENCY OXYGEN EQUIPMENT

Edmund M. Anderson, 535 Traffic Way, Arroyo Grande, Calif. 93420

Filed Mar. 7, 1978, Ser. No. 884,154
Int. Cl.[2] A61M 16/00
U.S. Cl. 128—203.12 **4 Claims**



1. In combination:
an oxygen bottle having a delivery outlet;
an oxygen delivery valve communicating with said outlet to receive oxygen therefrom;
a handle for operating said valve between open and closed positions, said handle having an arm carrying a magnet;
a reed switch positioned to be closed by engagement thereof by said magnet in the open valve position of said handle;
a blower electrically connected to and operated by closing of said reed switch;
an air delivery tube connected at one end to the discharge outlet of said blower to receive air discharged therefrom, said tube having flexibility along its length;
a nebulizer assembly operatively connected to the other end of said delivery tube to receive air therefrom when said handle is in said closed position; and
a hose operatively connected between said oxygen delivery valve and said nebulizer assembly to receive oxygen from said bottle and to deliver it to said nebulizer assembly when said handle is in said open valve position;
said nebulizer assembly including a patient's breathing mouthpiece for delivering the air or oxygen to a patient.

4,197,843

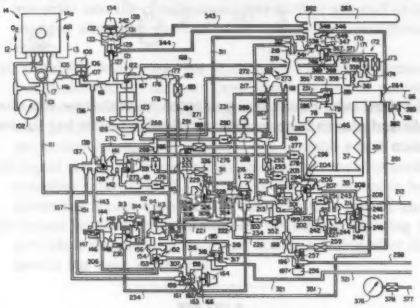
VOLUME LIMITING VENTILATOR

Forrest M. Bird, Palm Springs, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 3, 1978, Ser. No. 892,677
Int. Cl.[2] A61M 16/00
U.S. Cl. 128—200.14 **21 Claims**

1. In a volume limiting ventilator having an inhalation phase and an exhalation phase in its operative cycle for use with a source of gas under pressure, an inlet adapted to be connected to the source of gas, a rigid canister, an expandable and collapsible bellows in said canister forming a chamber inside the bellows and in cooperation with the canister forming a chamber exterior of the bellows, a patient adapter adapted to be connected to the airway of the patient, means for connecting the patient adapter to the chamber within the bellows, flow path means for connecting the chamber exterior of the bellows and the chamber inside the bellows, transfer valve means mounted in said flow path means for controlling the flow of gases through the flow path means, a sequencing servo having an inlet connected to the inlet of the ventilator, an outlet, and a valve member movable between open and closed positions

for controlling the flow of gases from the inlet to the outlet of the sequencing servo to cause the inhalation phase and the exhalation phase respectively of the ventilator, diaphragm-operated means for moving the valve member between its open and closed positions, means coupled to the sequencing servo for adjusting the forces applied to the diaphragm, a master venturi assembly and a sensing venturi assembly coupled to the flow path means both between the chamber exterior of the bellows and the transfer valve means, means for connecting the sensing servo assembly to the diaphragm-operated means of the sequencing servo so that pressure sensed by the sensing venturi assembly is supplied to the sequencing servo assembly, means connected between the outlet of the sequencing servo assembly and the master venturi assembly for supplying source gas to the master venturi during the inhalation phase, means connected between the inlet of the ventilator and the sensing venturi assembly for supplying source gas to the sensing venturi at the commencement of the exhalation phase, an exhalation valve assembly having an inlet connected to the patient



adapter and an outlet vented to the atmosphere, means for supplying source gas from the sequencing servo during the inhalation phase to maintain the exhalation valve assembly in a closed position, a volume stabilizer valve assembly coupled to the master venturi assembly, said transfer valve assembly and said volume stabilizer valve assembly each having a valve member movable between open and closed positions and diaphragm-operated means for moving their valve member toward one of said positions, and means for supplying source gas to said diaphragm-operated means of said transfer valve assembly and said volume stabilizer valve assembly to simultaneously move their valve members to closed positions during the inhalation phase including means for causing a delayed opening of the valve member for the transfer valve assembly at the commencement of the exhalation phase, thereby causing opening of the volume stabilizer valve assembly prior to opening of the volume transfer and exhalation valve assemblies at the end of inhalation so that the gas volume above ambient pressure in the chamber exterior of the bellows will be vented to ambient.

4,197,844

MONITOR DEVICE FOR A VENTILATION UNIT

Hans-Joachim Hartwig, Lübeck, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

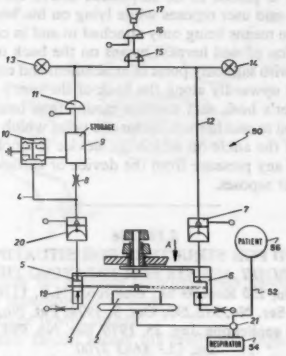
Filed Jan. 19, 1978, Ser. No. 870,832

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1977, 2702125

Int. Cl.[2] A61M *16/00*

U.S. Cl. 128—205.23 **6 Claims**

1. In a respiratory device comprising a respirator and breathing gas passage means to connect said respirator to a patient, a monitor device for monitoring the breathing air pressure in said breathing gas passage, said monitor device comprising: a pressure gauge connected into said breathing gas passage and comprising a pivotal indicator pointer which is movable in response to pressure changes in directions corresponding to whether the pressure is raised or lowered, first and second spaced apart air gates located in the path of movement of said pointer at locations corresponding, respectively, to a maximum and to a minimum pressure in the breathing passage, each of said gates having an air discharge which is interruptable by the pointer when the pressure in the breathing passage reaches the respective maximum or minimal value; and signal means comprising a first logic circuit for overpressure connected to said gate located at said maximum pressure location and including a first negation amplifier connected thereto, a first drop signal connected to said negation amplifier to be actuated by output signals therefrom, said signal means further comprising a sec-



ond logic circuit for underpressure located at said air gate at said minimum pressure location, a series-switched OR-element, both of said underpressure and said overpressure logic circuits being connected to inputs of said OR-element, a first identity element connected to the output of said OR-element, and a tuning pipe connected to said identity element to be actuated by output signals from said OR-element, said second logic circuit including a second negation amplifier element connected to said air gate located at minimum pressure location, a throttle connected to said second negation amplifier, a storage connected both ahead and behind said throttle in said second logic circuit, a second identity element connected to the output of said storage, and a drop signal connected to the output of said second identity element and ahead of the connection to said OR-element.

4,197,845

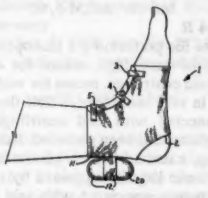
DEVICE FOR THE PREVENTION OF DECUBITUS ULCERS ON THE HUMAN HEEL

Edward G. Browning, 1203 E. Dear, Kirksville, Mo. 63501

Filed Jun. 5, 1978, Ser. No. 912,402

Int. Cl.[2] A61B *19/00*

U.S. Cl. 128—149 **6 Claims**



1. A device for the prevention of decubitus ulcers comprising:

a. an ankle harness means for the human ankle; said ankle

harness means being shaped in the form of the human ankle area and being formed only of soft flexible material; said harness means having a cut-out portion which permits the heel of the user of the device to be open to the atmosphere to allow for ventilation; said ankle harness means being sized and shaped such that when positioned for usage around an ankle area of the user, edges of said ankle harness means overlap each other on the front side of the ankle;

b. fastener means attached to said harness means in proximity to said edges for securely holding said harness means on the ankle area of the user's foot on which the device is employed;

c. cushion means attached to said harness means for causing the device user's heel and back ankle area on which said device is placed to be suspended above the surface on which said user reposes while lying on his/her back; said cushion means being only attached to and in contact with a portion of said harness means on the back of the user's ankle with said only point of attachment and contact being spaced upwardly along the back of the user's ankle from the user's heel; said cushion means thus being securely fastened to said harness means at a point which permits the heel of the ankle on which the device is employed to be free of any pressure from the device or surface on which the user reposes.

4,197,846

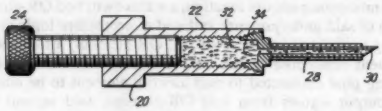
METHOD FOR STRUCTURE FOR SITUATING IN A LIVING BODY AGENTS FOR TREATING THE BODY

Louis Bucalo, 155 Roberts St., Holbrook, N.Y. 11741

Division of Ser. No. 513,295, Oct. 9, 1974, Pat. No. 4,005,699. This application Jun. 25, 1975, Ser. No. 590,268

Int. Cl.[2] A61J 2/00

U.S. Cl. 128—218 P **17 Claims**



1. In a method of treating a living being, the step of injecting with a syringe, into tissue of the living being, an absorbable liquid substance, in which a plurality of solid bodies of hydrogenated vegetable oil are suspended to an extent sufficient to be distributed throughout the liquid substance, in an amount sufficient to change the characteristics of the tissue receiving the injection, said solid bodies having the property of being absorbable at a slower rate than the liquid substance.

4,197,847

METHOD AND APPARATUS FOR COLLECTING TRANSFUSABLE GRANULOCYTES

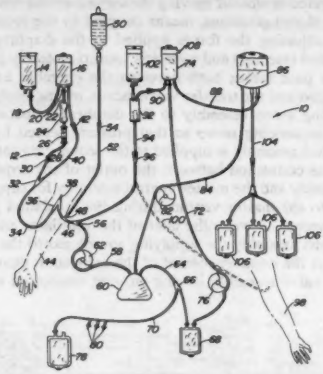
Isaac Djerassi, 2034 Delancey Pl., Philadelphia, Pa. 19103

Continuation-in-part of Ser. No. 783,380, Mar. 31, 1977, Pat. No. 4,111,199. This application Oct. 20, 1977, Ser. No. 843,928

Int. Cl.[2] A61M 5/00

U.S. Cl. 128—214 R **9 Claims**

1. An apparatus for performing a leukopheresis comprising an interrupted flow centrifuge, means for delivering blood from a donor to said centrifuge, means for withdrawing plasma from said blood in said centrifuge, a first flexible plastic bag, tube means connected with said centrifuge for delivering blood, after the plasma has been removed, from said centrifuge to said plastic bag, a second flexible plastic bag, said first and second flexible plastic bags being joined by a flexible transfer tube, third tube means associated with said first plastic bag, said third tube means being adapted to withdraw white blood cells from said first flexible plastic bag, second tube means secured to said second flexible plastic bag, said second tube means being adpated to introduce the plasma previously removed from the blood into said second flexible plastic bag, and third tube means secured to said second flexible plastic bag,



said third tube means being adapted to withdraw red blood cells and plasma from said second flexible plastic bag for reinfusion into a donor.

4,197,848

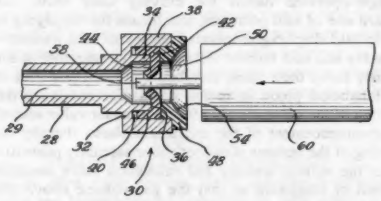
CLOSED URINARY IRRIGATION SITE

Scott T. Garrett, Highland Park; Robert R. Fasana, Antioch, and William L. Rudzena, Fox Lake, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jan. 6, 1978, Ser. No. 867,404

Int. Cl.[2] A61M 7/00

U.S. Cl. 128—247 **12 Claims**



1. In a urinary irrigation device of the type having a main tubular member defining part of a urinary drainage path and a tubular branch attached thereto and defining an irrigation path extending to said drainage path from a closed irrigation site at the distal end of said branch, the improvement wherein said site comprises:

a rigid lip defining a mouth at said distal end;

a resilient, impermeable membrane against said lip and covering said mouth, said membrane having a normally closed, resiliently deformable slit therethrough over said mouth; and

securing means at said distal end to compress a portion of said membrane, spaced from said slit, against said lip, thereby biasing said slit into a closed position, said biasing effect being greater than that of the uncompressed membrane.

4,197,849

FLEXIBLE MANIPULATIVE INCONTINENT AID

Emma T. Bostick, 6525 Calle Lottie, Tucson, Ariz. 85718

Filed Oct. 3, 1977, Ser. No. 838,623
Int. Cl.[2] A61F 5/44
U.S. Cl. 128—295 8 Claims

1. A male incontinent device comprising:

(a) A receptacle of pliable, liquid-impervious material having a front panel, a rear panel, said panels connected to each other to define a liquidtight compartment therebetween;

(b) said front panel having means for securement about the male penis including projection means adapted to extend inwardly into the compartment and further adapted to be engaged about the shaft of penis to provide a seal thereabout;

(c) a sealable access opening leading into the compartment and positioned on the rear panel opposite to said projection means, said access opening being sized so an attendant may reach therethrough into the compartment to seal the projection means to the penis;

(d) liquid absorbent means within said compartment in unobstructing relation to the portion of the compartment between the access opening and the projection means, and;

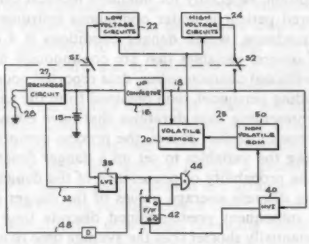
(e) means on the rear panel adjacent the sealable opening to provide a means for sealing said access opening after the device has been positioned.

4,197,850

IMPLANTABLE HUMAN TISSUE STIMULATOR WITH MEMORY PROTECT MEANS

Joseph H. Schulman, Los Angeles, and Jozef I. Kie Sioe Tan, Sylmar, both of Calif., assignors to Pacesetter Systems, Inc., Sylmar, Calif.

Filed Nov. 3, 1978, Ser. No. 957,410
Int. Cl.[2] A61N 1/36
U.S. Cl. 128—419 PG 8 Claims



1. In a device-implantable in a human body for performing preselected functions therein the device including circuit means powered by power means and further including memory means for storing a plurality of parameter values, means for applying said parameter values to said circuit means to control operation of the latter as a function of the parameter values, an arrangement comprising:

sensing means for sensing voltage applied by said power means to said memory means; and

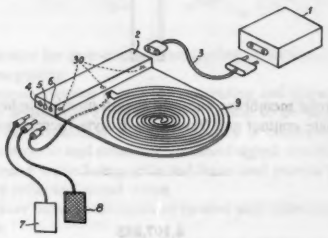
resetting means responsive to said sensing means for resetting said memory means to store preselected parameter values after said sensing means sensed that the voltage to said memory means first dropped below a preselected level and thereafter was not less than said preselected level.

4,197,851

APPARATUS FOR EMITTING HIGH-FREQUENCY ELECTROMAGNETIC WAVES

Victor M. Fellus, 24, rue Joseph Bertrand, 78220 Viroflay, France

Filed Jan. 27, 1978, Ser. No. 872,959
Claims priority, application France, Apr. 14, 1977, 77 11191
Int. Cl.[2] A61N 1/40
U.S. Cl. 128—422 11 Claims



1. Apparatus for emitting high-frequency electromagnetic waves, said apparatus comprising:

a low-voltage power supply,

a solid state circuit means for producing high-frequency, low-energy electromagnetic waves, said circuit means comprising an output which emits said high-frequency, low-energy electromagnetic waves, and an input,

means connecting said input to said power supply,

at least one antenna connected to the output of said circuit means, for producing a low energy high-frequency electromagnetic field without significant thermal effects in response to the waves produced by said circuit means,

said antenna comprising at least one conductor on a support which is formed from an electrically insulating material applicable directly on the skin of a patient's body and formed to conform to the contour of the area of the body to which it is applied,

said at least one conductor including a length of thin conductive material in a predetermined pattern on said support to apply the electromagnetic waves to the body.

4,197,852

CATHETER ELECTRODE FOR ELECTROCHEMICAL ANALYSIS

Johannes G. Schindler, Marburg an der Lahn, and Wilfried Schill, Bad Homburg von der Hohe, both of Fed. Rep. of Germany, assignors to Dr. E. Fresenius Chemisch Pharmazeutische Industrie KG Apparatebau KG, Bad Homburg, Fed. Rep. of Germany

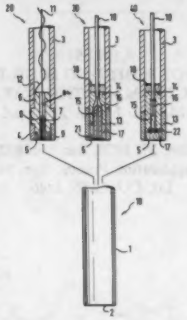
Filed Jun. 5, 1978, Ser. No. 912,884
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2726450
Int. Cl.[2] G01N 27/46
U.S. Cl. 128—635 2 Claims

1. An electrochemical analysis sensor comprising:

(a) a sheath constructed as a pericatheter being closed at one end thereof by a semi-permeable membrane being an integral part thereof, said membrane being permeable to certain predetermined substances, but impervious to macromolecules and bacteria; and

(b) a replaceable measuring probe having a membrane at one

end thereof, disposed in said sheath, said measuring probe being a completely self-contained sensing device, said



probe membrane and said sheath membrane being in intimate contact and free of electrolyte therebetween.

4,197,853

PO_2/PCO_2 SENSOR

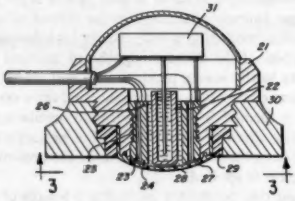
Dawood Parker, London, England, assignor to G. D. Searle & Co., Skokie, Ill.

Filed Jul. 20, 1978, Ser. No. 926,473

Claims priority, application United Kingdom, Jul. 26, 1977, 31273/77

Int. Cl.² A61B 5/00

U.S. Cl. 128—635 **10 Claims**



1. An electrochemical sensor for the simultaneous and continuous measurements of PO_2 and PCO_2 in fluids which comprises:

(a) an electrode chamber having within;

a first electrode responsive to pH changes produced by the presence of carbon dioxide,

a second electrode capable of electrochemically reducing oxygen.

a reference electrode for each of or common to the first and second electrodes,

means for holding first electrode, second electrode and reference electrode in spaced apart, insulated relationship.

an electrolyte in contact with the reference electrode and first and second electrodes;

(b) a membrane permeable to oxygen and carbon dioxide having a first and second side, the first side being in contact with the electrolyte and the second side available for exposure to carbon dioxide and oxygen gases from fluid to be tested, said membrane holding the electrolyte in contact with the electrodes and providing for entry of oxygen and carbon dioxide gas into the electrolyte; and said membrane being also permeable to water when the electrolyte is solid.

4,197,854

PROCESS AND APPARATUS FOR PATIENT DANGER RECOGNITION AND FORECASTING OF A DANGER CONDITION, ESPECIALLY IN CASE OF INTENSIVE MEDICAL CARE

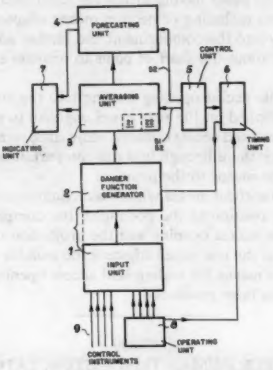
Zoltán Kisa, Budapest, Hungary, assignor to Medicor Művek, Budapest, Hungary

Continuation of Ser. No. 595,532, Jul. 14, 1975, abandoned. This application Jan. 24, 1978, Ser. No. 871,924

Claims priority, application Hungary, Jul. 19, 1974, 10261

Int. Cl.² A01B 5/00

U.S. Cl. 128—630 **11 Claims**



1. A process for the recognition and forecasting of a possible danger condition, especially for intensive medical care where an endangered patient is under continuous instrumental and personal attendance, which danger conditions is a complex function of several variables that are continuously measured specific conditional characteristics, data reported occasionally by the attending personnel, data obtained from the anamnesis, and data representing time durations that have elapsed since the occurrence of certain events, the process comprising the steps of: using the variables to set up a danger function that represents the probability of occurrence of the danger condition; forming discrete average values of the danger function throughout subsequent predetermined discrete time periods that are substantially shorter than the average time required for a medical intervention, known to be between 2 and 10 minutes, to overcome the danger condition; comparing the formed average values with respective levels of discrete increasing predetermined sequences of threshold values; providing an indication associated with a highest momentaneous exceeded threshold value; using the discrete average values to set up a regression function which approximates the sequence thereof; determining a subsequent extrapolated value of the regression function for the next time period that represents a forecast average value of the danger function; and also indicating the extrapolated value provided it is higher than a predetermined level which latter corresponds to at least the lowest one of the threshold values; which lowest value has not been exceeded during said comparing step.

4,197,855

DEVICE FOR MEASURING THE LOCATION, THE ATTITUDE AND/OR THE CHANGE IN LOCATION OR, RESPECTIVELY, ATTITUDE OF A RIGID BODY IN SPACE

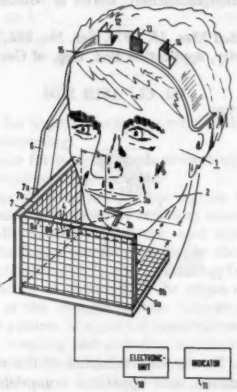
Arthur Lewin, Johannesburg, South Africa, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 17, 1978, Ser. No. 887,654

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1977, 2715106

Int. Cl.² A61B 5/05, 5/06, 5/10

U.S. Cl. 128—653 **18 Claims**



16. A system for measuring and registering information with respect to location and attitude of a rigid body in space, said system comprising a field generator arranged in fixed relation to the body, flux responsive means for mounting independently of the field generator and at an interval therefrom, and for supplying electrical signals in accordance with field flux from the field generator to represent positional information with respect to the body, and an electronic unit coupled with said flux responsive means for obtaining and evaluating the electrical signals from the flux responsive means, said field generator being constructed such that it produces a defined irregular field, and said flux responsive means comprising at least one first surface, said first surface having a plurality of sensor elements at least a part of which are arranged to form first sensor lines running parallel to each other, the sensor elements of the respective first sensor lines providing respective individual outputs and such respective individual outputs being electrically differentially coupled together for supplying a first differential signal, and comprising at least one second surface disposed between the field generator and the first surface, and parallel to the first surface to form a pair therewith and at an interval therefrom, the second surface having a plurality of second sensor lines comprising series of sensor elements extending parallel to respective sensor lines of the first surface, with the sensor elements of the respective second sensor lines of the second surface providing respective individual outputs and such respective individual outputs being electrically differentially coupled together for supplying a second differential signal, and said electronic device having combining means for differentially combining the first and second differential signals with respect to the first and second surfaces of said pair.

4,197,856

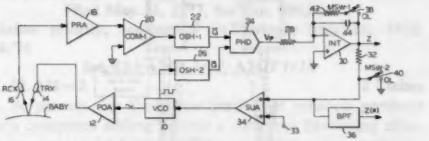
ULTRASONIC RESPIRATION/CONVULSION MONITORING APPARATUS AND METHOD FOR ITS USE

Robert B. Northrop, Chaplin St., Chaplin, Conn. 06235

Filed Apr. 10, 1978, Ser. No. 894,695

Int. Cl.² A61B 5/08

U.S. Cl. 128—660 **19 Claims**



1. Apparatus for non-contact monitoring of movement of a subject comprising:

(a) ultrasound source means for generating and transmitting to the abdominal/chest area of a person to be monitored coherent ultrasound whose frequency is controllable by application to said source of a control signal, the transmitted sound wave being reflected from said person to provide a reflected sound wave;

(b) receiver means positioned to receive said reflected sound wave;

(c) phase detector means coupled to said ultrasound source means and to said receiver means and adapted to compare the phase of said reflected sound wave to the phase of said transmitted sound wave and to generate a phase difference signal therefrom;

(d) change detection means coupled to said phase detector means to modify said phase difference signal to generate therefrom a change signal which is proportional to changes in the length of the air path of said transmitted and reflected sound waves between said transmitter means and said receiver means, said change signal thereby exhibiting variations representing the amplitude of respiratory motion when said source means and said receiver means are aimed at the breathing person;

(e) frequency adjusting means coupled to said change detection means to receive said change signal and coupled to said generating means to adjust the frequency of said signal voltage in response to said change signal so as to maintain substantially constant the number of wave lengths of ultrasound in said air path despite changes in the length thereof; and

(f) window/alarm circuit means coupled to said change detector means to receive said change signal for determining whether said variations in said change signal lie within a selected range of values representative of proper respiration for a selected interval of time and for sounding an alarm when said change signal does not lie within said selected range for said selected interval of time.

4,197,857

SYSTEM FOR MEASUREMENT OF OXYGEN UPTAKE AND RESPIRATORY QUOTIENT

John J. Osborn, Tiburon, Calif., assignor to Research Development Corporation, San Francisco, Calif.

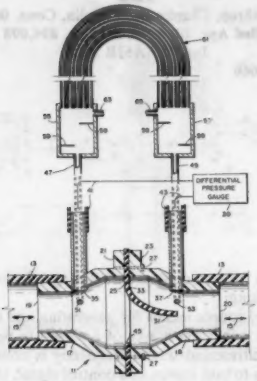
Filed Apr. 6, 1978, Ser. No. 894,189

Int. Cl.² A61B 5/08

U.S. Cl. 128—718 **11 Claims**

1. Apparatus for use in a system for measuring oxygen uptake and the like comprising first conduit means for conducting flow of respiration gases to and from a patient, said first conduit means including first flow resistance means, second conduit means having one end thereof in communication with said first conduit means on one side of said first flow resistance means and the other end thereof in communication with said first conduit means on the other side of said first flow resis-

tance means, said second conduit means including second flow resistance means, the volume of said second conduit means being substantially greater than the volume of gases conducted



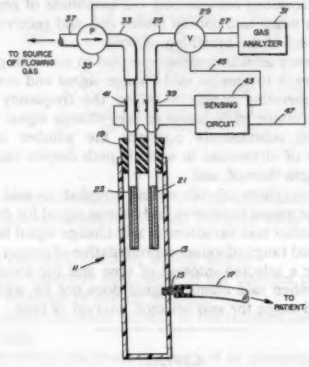
therethrough by a single breath of the patient whereby flushing of the second conduit means is precluded, and sampling means coupled adjacent the ends of said second conduit means for analyzing the gases therein.

4,197,858

SENSING LIQUID TRAP FOR RESPIRATORY GAS ANALYZING SYSTEMS

John J. Osborn, Tiburon, Calif., assignor to Research Development Corporation, San Francisco, Calif.

Filed Apr. 6, 1978, Ser. No. 894,190
Int. Cl.² A61B 5/08
U.S. Cl. 128—718 **6 Claims**



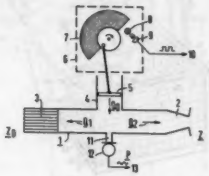
1. A liquid trap for use with respiratory gas analysis systems comprising a container, a first fluid line connected to said container and adapted to be placed in communication with a patient, a second fluid line connected to said container and adapted to be connected to a gas analyzer, an electrically operated valve in said second fluid line, electrical probe means in said container for sensing a predetermined level of liquid therein, sensing circuit means having an input coupled to said probe means and output means coupled to said electrically operated valve, said sensing circuit means being operable in response to the attainment of said predetermined level of liquid to close said electrically operated valve, a third fluid line connected to said container and adapted to be connected to a source of flushing gas, and an electrically operated pump in said third fluid line, said sensing circuit means being further operable when said predetermined level has been reached to commence operation of said electrically operated pump.

4,197,859

APPARATUS FOR THE DETERMINATION OF THE RESPIRATORY PASSAGEWAY IMPEDANCE

Karl Prestele, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 15, 1978, Ser. No. 886,724
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714216
Int. Cl.² A61B 5/08
U.S. Cl. 128—720 **16 Claims**



1. Apparatus for the determination of the respiratory passageway impedance, said apparatus comprising a breathing tube having a mouthpiece at one end, having a pulse generator means (5, 6) coupled with said breathing tube for producing an impressed higher frequency total current (Q_o) of a higher frequency as compared with the respiratory frequency, thereby to subject the breath flow with flow pulsations of a higher frequency as compared with the respiratory frequency, and having a selected pressure measuring means (12) coupled with said breathing tube for responding to the correspondingly higher frequency pressure fluctuations for providing a pressure signal (P) of the higher frequency, the end of the breathing tube remote from the mouthpiece having a flow impedance (3) with a known impedance value (Z_o) for serving as a comparison impedance, such that a first partial current (Q_1) of the higher frequency total current (Q_o) flows via the flow impedance (3), while a second partial current (Q_2) flows via the mouthpiece into the respiratory tract of a test subject, characterized in that, in order to determine that particular second partial current (Q_2) of the impressed higher-frequency total current (Q_o), which flows via the mouthpiece (2) into the respiratory tract of the test subject, said apparatus further comprises: signal forming means (7–18) coupled with said pulse generator means (5, 6) for supplying a first signal in accordance with the higher frequency total current (Q_o) and coupled with said selective pressure measuring means (12) for supplying a second signal in accordance with the first partial current (Q_1), and a subtractor means (19) connected to said signal forming means for subtracting the second signal from the first signal to provide a third signal in accordance with the second partial current (Q_2) which flows via the mouthpiece, said signal forming means (7–18) comprising a phase tuning means (17, 18) connected to the subtractor means, and adjustable during a calibration operation carried out while the breathing tube (1) is sealed off at the mouthpiece (2) to bring the first signal and the second signal substantially into phase with one another.

4,197,860

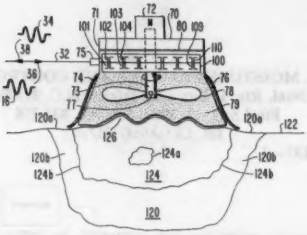
HYPERTHERMIA APPLICATOR

Fred Sterzer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 21, 1977, Ser. No. 853,585

Int. Cl.[2] A61N *5/02*

U.S. Cl. 128—804 **3 Claims**



1. Apparatus for hyperthermia treatment of tissue by microwave energy comprising:

a. source means for providing microwave signals at only a selected frequency and intensity;

b. means responsive to said source signals for generating simultaneously a plurality of radiating microwave signals in a spatially distributed pattern; said signal generating means including a plurality of dipole elements nonuniformly distributed over a given planar surface area with a greater number of elements at the edges of said surface area than at the central portion whereby the spatially distributed pattern of signals is nonuniform; and

c. means for coupling said radiating signals to said tissue to irradiate said tissue, said coupling means including an applicator having a flexible portion containing dielectric material, said applicator being adapted to conform to the surface of said tissue, whereby greater heat is generated in said tissue at the regions corresponding to the edges of said surface area than at the inner portions.

4,197,861

SMOKING MATERIAL

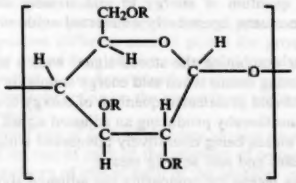
Charles H. Keith, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Jun. 24, 1975, Ser. No. 589,957

Int. Cl.[2] A24D *1/18*; A24B *15/02*

U.S. Cl. 131—2 **7 Claims**

1. A smoking material comprising a combustible organic ingredient, a particulate inorganic filler and from 0.2 to 5% of an alkali metal or alkaline earth metal salt of an organic acid, the major proportion of said combustible organic ingredient being a material selected from the group consisting of film-forming cellulose derivatives, their salts and mixtures thereof having the recurring anhydroglucose unit:



wherein at least one R is selected from the group consisting of lower alkyl, carboxy lower alkyl, hydroxy lower alkyl groups and mixtures thereof; and the remaining R's are hydrogen and the average degree of substitution is from about 0.2 to 3.0; said major portion of said combustible organic ingredient and said particulate inorganic filler being present in a weight-to-weight ratio of 15:85 to 35.3:64.7.

4,197,862

CYCLOALIPHATIC OXYGENATED DERIVATIVE AS FLAVORING INGREDIENT IN TOBACCO PRODUCTS

Edouard P. Demole, Coppet, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

Filed May 26, 1977, Ser. No. 800,846

Claims priority, application Switzerland, May 31, 1976, 6764/76

Int. Cl.[2] A24B *3/12*; A24D *1/18*

U.S. Cl. 131—2 **3 Claims**

1. A process for the aromatization of tobacco products which comprises adding thereto a small but flavouring effective amount of 2,6,6-trimethyl-3-oxo-cyclohex-1-en-carbaldehyde.

4,197,863

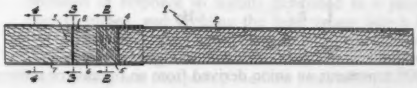
TOBACCO SMOKE FILTER

Benjamin Clayton, 1621 Bank of the Southwest Bldg., Houston, Tex. 77002, and Benjamin H. Thurman, Rte. 4, Culpeper, Va. 22701

Continuation of Ser. No. 466,483, May 2, 1974, abandoned, which is a continuation-in-part of Ser. No. 346,278, Mar. 30, 1973, abandoned. This application Feb. 27, 1976, Ser. No. 661,865

Int. Cl.[2] A24B *15/027*

U.S. Cl. 131—10.7 **15 Claims**



8. A filter cigarette, comprising a tobacco-filled portion and a filter portion having a smoke inlet end and a smoke outlet end, said filter portion comprising a first cylindrical section of filter rod at the smoke inlet end of said filter portion composed throughout of cotton fibers with substantially all said fibers extending circumferentially around the axis of said rod transversely thereof, a second cylindrical section of filter rod composed of generally parallel cellulose acetate fibers, said second section being positioned rearwardly of said first section and adjacent thereto, a third cylindrical section of filter rod composed of generally parallel cellulose acetate fibers, and thin porous non-perforated disc means composed of randomly deposited and intertangled wood cellulose fibers, said disc means having a diameter substantially equal to that of said filter rods and being sandwiched between said second and third sections, and a tipping overwrap encasing said filter portion and extending therebeyond to engage said tobacco-filled portion, said cigarette possessing a good draw.

4,197,864

CONVEYING ROD-LIKE ARTICLES

Desmond W. Molins, London, England, assignor to Molins Ltd., United Kingdom

Filed Dec. 6, 1977, Ser. No. 858,012

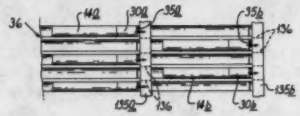
Claims priority, application United Kingdom, Dec. 15, 1976, 52250/76

Int. Cl.[2] A24C *5/58*

U.S. Cl. 131—94 **15 Claims**

12. A conveying apparatus for rod-like articles, comprising conveyor means including a plurality of carriers for moving the rod-like articles in a direction transverse to their lengths, means for defining a predetermined axial position for an article

in each of the carriers, and means for causing an air flow along each carrier to move an article axially in said carrier to said



predetermined axial position while said carrier moves articles in the transverse direction.

4,197,865

TREATING HAIR WITH QUATERNIZED POLYMERS

Bernard Jacquet, Antony, and Gerard Lang, Epinay-sur-Seine, both of France, assignors to L'Oreal, Paris, France

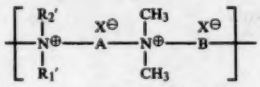
Continuation of Ser. No. 702,924, Jul. 6, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,467

Claims priority, application Luxembourg, Jul. 4, 1975, 72901; Nov. 13, 1975, 73792

Int. Cl.[2] A45D *7/00*; A61K *7/06*

U.S. Cl. 132—7 **4 Claims**

1. A process for treating the hair to improve the qualities thereof comprising applying to the hair an effective amount of a cosmetic composition comprising an aqueous, alcoholic or hydroalcoholic solution of an effective amount of at least one quaternized polymer having recurring units of the formula



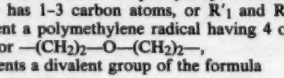
wherein

$X^{\ominus}$ represents an anion derived from an organic or mineral acid;

R'_2 is an aliphatic radical having a maximum of 20 carbon atoms;

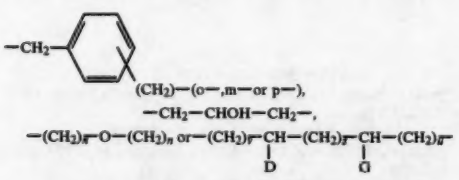
R'_1 is alkyl containing 2–20 carbon atoms, cycloalkyl having 5 or 6 carbon atoms or phenylalkyl wherein the alkyl moiety has 1–3 carbon atoms, or R'_1 and R'_2 together represent a polymethylene radical having 4 or 5 carbon atoms or $-(CH_2)_2-O-(CH_2)_2-$,

A represents a divalent group of the formula



wherein x, y and t are whole numbers ranging from 0 to 11 and being such that the sum (x+y+t) is greater than or equal to 0 and less than 18, and E and K represent hydrogen;

B represents a divalent group of the formula



wherein D and G represent hydrogen and v, z and u are whole numbers ranging from 0 to 11, two of them being able to be simultaneously equal to 0 such that the sum (v+z+u) is greater than or equal to 1 and lower than 18, and such that the sum (v+z+u) is greater than 1 when the sum (x+y+t) is equal to 0, and n is a whole number equal to 2 or 3.

2. The process of claim 1, wherein said cosmetic composition is applied to the hair before shampooing the hair.

4,197,866

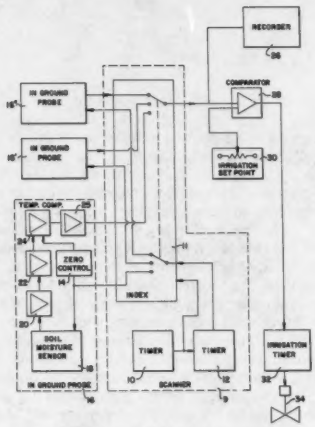
SOIL MOISTURE SAMPLER AND CONTROLLER

Jerry D. Neal, Rte. 1, Box 129, Trinity, N.C. 27370

Filed Sep. 19, 1977, Ser. No. 834,778

Int. Cl.[2] A01G *25/16*

U.S. Cl. 137—1 **14 Claims**



1. A moisture sampling and controlling apparatus comprising

at least one probe comprising a transfer means for transferring energy at a rate determined by its moisture content, energy sensing means for sensing the energy level of at least a part of said transfer means, energy supplying means for supplying energy to said transfer means, said sensing means producing a signal indicative of the sensed energy level;

timing means for actuating said energy supplying means to cause said energy supplying means to supply a preselected quantum of energy to said transfer means, said timing means operatively connected with said energy supplying means;

storage means for storing a signal from said sensing means before said energy supplying means supplies said preselected quantum of energy to said transfer means, said storage means operatively connected with said sensing means;

means for combining the stored signal with a signal from said sensing means when said energy supplying means has supplied said preselected quantum of energy to said transfer means thereby producing an adjusted signal, said combining means being operatively connected with said storage means and said sensing means;

comparing means for comparing the adjusted signal with a selectable reference, said comparing means operatively connected with said combining means; and

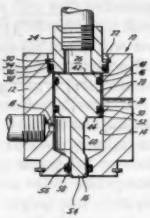
means for controlling the flow of an irrigating fluid, said flow control means operatively connected with said comparing means.

4,197,867

RELAY INDICATOR VALVE

Harry Roger, 124 Bank St., Lafayette, La. 70506

Filed Dec. 23, 1977, Ser. No. 863,430
Int. Cl.² F17D *3/00*; F16K *17/164*
U.S. Cl. 137—1 **6 Claims**



1. A method of detecting and indicating pressure drops below a pre-determined minimum and automatically sealing the inlet port to said pressure source using a pneumatic control system comprising:

(a) providing a relay valve for a common supply pressure;

(b) regulating said common supply pressure with a pressure regulator;

(c) positioning a choke between said relay valve and said pressure regulator;

(d) inserting a plurality of valves below the choke wherein each of the valves is provided with:

including a bore positioned within a valve body and having an outlet port communicating with the bore for exhausting the residual pressure from the body, a pilot signal inlet port for communicating with the bore for receiving pilot pressure within the body, a supply inlet port communicating with the bore for receiving a supply pressure within said body, a supply outlet communicating with said bore for exhausting the supply of fluid from said body

(e) moveably mounting a piston within the bore;

(f) machining on the piston a front surface with an area exposed to the supply pressure for exerting a first force from the supply pressure acting thereon and a rear surface with an area for receiving a second force from the pilot pressure acting thereon;

(g) mounting a stem extending from said rear surface passing through the residual fluid outlet port;

(h) enabling movement of the piston between first and second positions, providing the first position being where

the piston body prevents passage of the supply fluid out the supply outlet port and the stem prevents passage of the pilot fluid out the residual fluid outlet port, and

the providing second position being where

the piston body prevents passage of the supply fluid out the pilot signal inlet port while permitting passage of the supply fluid out the supply outlet port and allowing passage of any residual pilot fluid out the residual fluid outlet port; and

(i) maintaining a plurality of pilot signal pressures from each a respective different control points for providing pressure to one of each of said valve pilot signal ports;

(j) providing a pre-determined regulated common supply inlet pressure acting on the piston front surface of each of the valves;

(k) enabling one of each of plurality of pilot signal pressures to act on one of each of the plurality of respective piston rear surfaces of one of each of the plurality of valves;

(l) enabling at least one of the pilot signal pressure ports mounted with one of the valve bodies to seal upon occurrence of a pre-determined minimum pilot signal pressure drop by moving the piston body;

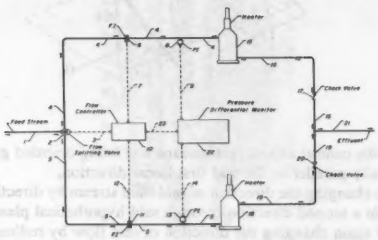
(m) enabling the common supply pressure associated with the valve having the moving piston to bleed to atmosphere through the common supply bleed port of the valve; and p1 (n) repositioning the moved piston upon a reinstatement of sufficient pilot signal pressure in the one valve.

4,197,868

FLOW CONTROL SYSTEM AND CONTROL METHOD FOR PARALLEL FLOW PROCESS EQUIPMENT

Don B. Carson, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 21, 1978, Ser. No. 935,398
Int. Cl.² G05D *11/035*
U.S. Cl. 137—7 **4 Claims**



2. A method of regulating the flow of a process stream through two heat exchangers operated in parallel-flow which comprises:

(a) passing the feed stream into a three-way valve means operated in response to signals generated in a process control means, and dividing the feed stream into a first process stream having a first flow rate and a second process stream having a second flow rate;

(b) monitoring and comparing the flow rates of the first and the second process streams and generating a first signal in the process control means, the first signal being representative of the adjustment in the operation of the three-way valve means necessary to equalize the flow rates of the first and the second process streams;

(c) passing the first process stream through a first heat exchanger and passing the second process stream through a second heat exchanger;

(d) passing the first process stream through a first check valve and passing the second process stream through a second check valve; and,

(e) comparing the pressure of the first process stream at a point upstream of the first check valve to the pressure of the second process stream at a corresponding point upstream of the second check valve, and replacing the first signal of step (b) by a second signal generated in the process control means if the pressure differential between the first and the second process streams exceeds a predetermined limit, with the second signal effecting the adjustment in the operation of the three-way valve means necessary to terminate the flow of the process stream having the lower pressure.

4,197,869

METHOD AND APPARATUS FOR GENERATING A STABLE VORTEX FLUID FLOW PATTERN

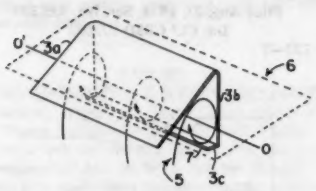
Alexander J. Moncrieff-Yeates, 8924 Rhyme Ct., Annadane, Va. 22003

Continuation-in-part of Ser. No. 828,930, Aug. 29, 1977, Pat. No. 4,131,105, which is a continuation-in-part of Ser. No. 570,798, Apr. 23, 1975, Pat. No. 4,056,091. This application Jan. 10, 1978, Ser. No. 868,428
Int. Cl.² F15C *1/16*
U.S. Cl. 137—13 **16 Claims**

15. A method of generating a stable vortical pattern of flow

of a fluid stream defining a vortex within a volume having a central axis with the vortical core of the vortex being aligned generally with the central axis, said method comprising the steps of

(a) introducing said fluid stream into said volume by guiding one side of said stream in a first linear direction generally tangential to the outer circumference of said volume while leaving the other side of said stream free of restriction, said other side defining a hypothetical plane intersecting



the central axis of said volume and being oriented generally parallel to the said first linear direction,

(b) changing the direction of said fluid stream by directing it in a second direction through said hypothetical plane,

(c) again changing the direction of said flow by redirecting the fluid about said central axis in a direction opposite to said first direction,

(d) reducing the pressure of said fluid in the area of said central axis to a degree establishing a pressure gradient

$$\frac{\delta P}{\delta R} = \frac{\rho R}{k}\theta^2$$

across said stream and centered generally at said central axis where

δ=partial differential operator or calculus

P=pressure

R=distance from vortex axis

$\dot{\theta}$=angular velocity

k=constant

ρ=density of fluid and,

(e) discontinuing the act of directing said flow about said central axis prior to reentry of said flow through said plane, thus relying on said pressure gradient to pull said flow through an unconstrained expansion area adjacent said plane to reenter said stream in said first direction.

4,197,870

APPARATUS FOR VENTILATING LIQUID CONTAINERS ON AIRCRAFT

Florian Hildebrandt, Gunding, and Joachim Popp, Germering, both of Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

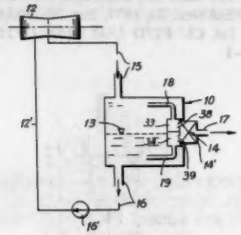
Filed Sep. 26, 1978, Ser. No. 945,892

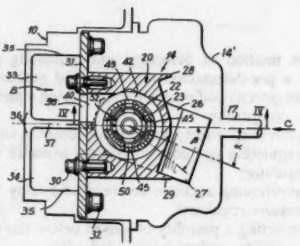
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2743994

Int. Cl.² F16K *17/36*

U.S. Cl. 137—43 **8 Claims**

1. Apparatus for ventilating a liquid tank in aircraft during hazardous pressure rises for all aircraft attitudes, comprising: a plurality of ventilation pipes, at least one of said ventilation pipes having an orifice above the liquid level of said tank and at least one of said ventilation pipes having an orifice below said liquid level; two separate chambers sealed off from the interior of said tank and connected to said ventilation pipes; a rotary slide valve associated with said chambers and having a weight for controlling said rotary slide valve according to flight attitude; said rotary slide valve having control slots offset so that flow via said ventilation pipe below said liquid





level is blocked during free flow via said ventilation pipe above said liquid level.

4,197,871

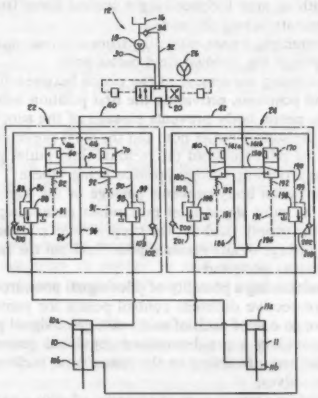
FLUID CONTROL VALVE

Stephen F. Merkel, Painesville, Ohio, assignor to Fluid Controls, Inc., Mentor, Ohio

Division of Ser. No. 767,827, Feb. 11, 1977, Pat. No. 4,136,753. This application Jul. 19, 1978, Ser. No. 926,156

Int. Cl.² B62D *5/08*; F16K *11/10*

U.S. Cl. 137—102 **9 Claims**



7. A diverter valve assembly for use in a power steering system or the like comprising:

(a) structure defining an inlet passage for receiving pressurized fluid from a source and a pair of companion fluid flow paths each concurrently receiving pressurized fluid from said inlet passage;

(b) structure defining two outlet passages, one associated with one companion flow path and the other outlet passage associated with the other companion flow path;

(c) each companion flow path including a first passage communicating with the associated outlet passage, and a crossover passage communicating with the outlet passage associated with the other companion flow path;

(d) each companion flow path including an associated multi-position valve for controlling the flow of pressurized fluid from the inlet passage to the first and the crossover passages in its associated companion flow path, each multi-position valve having a first position wherein said inlet passage is communicated with said first passage and a second position wherein said inlet passage is communicated with said crossover passage; and,

(e) valve operating means for controlling the position of each multi-position valve, said operating means including a biasing means urging said multi-position valve in each companion flow path towards the first position and a means responsive to a predetermined decrease in fluid pressure in said first passage for shifting said multi-position valve to its second position.

4,197,872

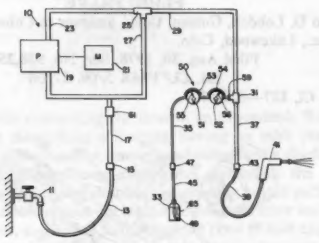
HIGH PRESSURE DISPENSING SYSTEM FOR MIXED LIQUIDS

Thomas A. Parker, 44 W. Essex Ave., Lansdowne, Pa. 19050

Filed Apr. 18, 1978, Ser. No. 897,651

Int. Cl.² F16K *19/00*

U.S. Cl. 137—115 **13 Claims**



1. A system for dispensing mixed liquids wherein an accurate proportion of a concentrated liquid is metered into a high pressure carrier liquid, said system comprising:

pumping means having a known delivery rate for providing said carrier liquid under high pressure at a discharge end of said system,

means connecting a source of said carrier liquid to said pumping means,

valve means intermediate said pumping means and the discharge end of said system operable to recirculate carrier liquid through said pumping means whenever said system is not in a dispensing cycle,

liquid injecting means intermediate said valve means and the discharge end of said system operable to meter concentrated liquid into said carrier liquid, and

means connecting a source of said concentrated liquid to said injecting means, said means including two in-line valves, the first of said valves being calibrated to modify the flow rate of said concentrated liquid to said injecting means and the second of said valves being calibrated to further modify the flow rate of said concentrated liquid to said injecting means so that said two in-line valves are, in combination, operable to precisely reduce the flow rate of said concentrated liquid into said carrier liquid to provide at the discharge end of said system an accurate concentration of concentrated liquid in said carrier liquid.

4,197,873

FLUID OPERABLE VALVES

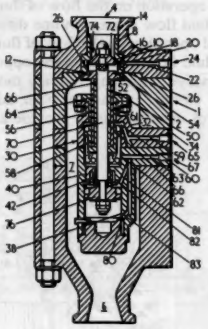
Michael I. Minogue, Langport; John R. Bennett, Yeovil, and John C. Whitehead, Cheltenham, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Feb. 13, 1978, Ser. No. 877,522

Claims priority, application United Kingdom, Feb. 25, 1977, 08022/77

Int. Cl.² F16K *31/122*

U.S. Cl. 137—219 **9 Claims**



1. A fluid-operable valve including a body, a cavity within the body, an inlet means in the body and leading to the cavity, an outlet means in the body and communicating with the cavity, a first valve seat associated with the inlet means, a second valve seat associated with the inlet means and positioned downstream of the first valve seat, a pilot valve member co-operable with the first valve seat and adapted for actuation into or out of contact therewith, a main valve member co-operable with the second valve seat and fluid operable into or out of sealing contact therewith, the main valve member having a sealing face, and purge means directed towards the sealing face of the main valve member when, in use, the main valve member is in close adjacency to the second valve seat for a brief period after the pilot valve member contacts said first valve seat for purging of the sealing face of the main valve member, in which a cylinder mounting block is disposed within a part of the cavity of the valve body, a cylinder is formed in the cylinder mounting block, a stem is provided for the main valve member and a piston is carried on the stem and is reciprocable within the cylinder, the cylinder is sealed from the cavity and the cylinder mounting block is provided with ports for the introduction and exhaust of fluid to and from each side of the piston, the stem is provided with an axial bore, a further coaxial cylinder is formed within the cylinder mounting block in which a rod of the pilot valve member is slidable co-axially within the axial bore of the stem of the main valve member and within the further cylinder.

4,197,874

PRESSURE REGULATOR AND FLOW CONTROL VALVE WITH PRE-EXHAUST VENT MEANS

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to MAC Valves, Inc., Wixom, Mich.

Filed Aug. 31, 1978, Ser. No. 938,514

Int. Cl.² F15B *11/04, 13/042*; F16K *17/18*

U.S. Cl. 137—270 **8 Claims**

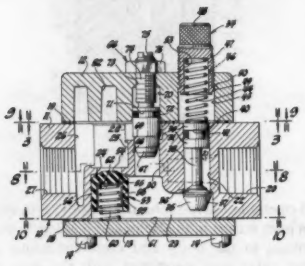
1. In a combination pressure regulating and flow control valve for controlling fluid flow through a fluid flow circuit, the combination comprising:

(a) a valve body and cover means having an upstream port for connection to a source of pressurized fluid, and a downstream port for connection to a fluid controlled apparatus in said fluid flow circuit, and a first fluid flow passage interconnecting said ports;

(b) an adjustable pressure regulator valve means operatively mounted in said first fluid flow passage to provide a reduced downstream pressure at the downstream pressure port when fluid is flowing through said first fluid flow passage from the upstream port to the downstream port, and to maintain said reduced downstream pressure at a fixed differential relative to the pressure at the upstream port;

(c) an adjustable fluid flow control valve means operatively mounted in said first fluid flow passage to provide a meter in control operation on the flow of fluid flowing through said first fluid flow passage in one direction, and a meter out control operation on the flow of fluid flowing through said first fluid flow passage in the opposite direction;

(d) a check valve means operatively mounted in said first fluid flow passage in parallel with said adjustable fluid flow control valve means to provide a free flow of fluid



flowing through said first fluid flow passage in a direction opposite to the direction of metering control;

(e) an adjustable quick exhaust valve means operatively mounted in a second fluid flow passage that is parallel to said first fluid flow passage and which interconnects said ports, and having a valve element movably mounted in a bore communicating with said second fluid flow passage, and said valve element having a back end and a front valve end, and said quick exhaust valve means bypassing the pressure regulator valve means, the check valve means, and fluid flow control valve means, for selective fast exhausting of fluid volume from said downstream pressure port through said second fluid flow passage and out said upstream pressure port for a time interval prior to a meter out control operation;

(f) a vent passage means connected to said upstream port for venting the valve element bore behind the valve element of the quick exhaust valve means.

4,197,875

BALL CHECK VALVE

Robert J. Schieferstein, Reading, Pa., and Enrique L. Kilayko, Weston, Mass., assignors to Liquid Metronics Incorporated, Waltham, Mass.

Filed May 16, 1978, Ser. No. 906,582
Int. Cl.[2] F16K *15/04*
U.S. Cl. 137—533.11 **4 Claims**

1. In a check valve having a port, sealing means comprising

a ball moveable toward and away from said port along the axis thereof, said ball having a diameter substantially larger than the diameter of said port

a rigid supporting surface surrounding said port, said supporting surface having

an inner annular surface surrounding said port

an outer annular surface extending radially outwardly at an angle away from said ball, and

an annular ridge of rounded cross-section between said inner and outer supporting surfaces extending in a direction toward said ball

an integral elastomeric sealing and ball seating element positioned between said ball and said supporting surface, said elastomeric element having

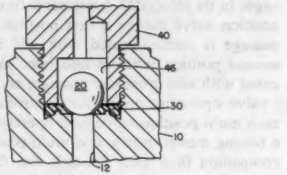
a central cylindrical opening

an outer annular sealing bead portion

an inner annular surface in contact with said supporting surface

an annular groove receiving said annular ridge, and

an inner ball seating surface on the ball side of said elastomeric element surrounding said central opening, and



retaining means spaced radially outwardly from said ball, said retaining means having

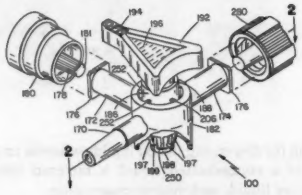
an annular end surface overlapping at least a portion of said ridge and in pressure contact with said elastomeric element outer sealing bead portion for deformation of said bead portion to provide an effective outer fluid seal without substantial deformation of said inner ball seating surface.

4,197,876

FLUID VALVE

Donn D. Lobdell, Golden, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Aug. 30, 1978, Ser. No. 938,250
Int. Cl.[2] F16K *5/04, 27/06*
U.S. Cl. 137—625.47 **11 Claims**



1. In a rotary stopcock valve including a molded plastic valve body, said body including on its outside surface integral external fittings for attachment of tubing carrying fluids to and from said valve, and a plastic valve core, said core being received in an interior bore of said valve body, said valve body including internal passages communicating between said ports on said bore, and said valve core including a plurality of passages for communicating between said ports on said bore, said core having a larger outside diameter than the internal diameter of said bore so as to provide an interference fit between said bore and core, the interference fit providing a seal to prevent leakage along said bore from said ports, the improvement wherein

said molded valve body comprises an outer and an inner tubular body,

said inner and outer bodies being molded as integral portions of said molded valve body,

said inner tubular body being spaced radially inward from, and generally concentric with, said outer body, thereby forming an annular gap between said bodies, said gap being open to the ambient at at least one axial end,

said bore being centrally located in said inner body, and

said external fittings being located on the outside of said outer body,

a plurality of spokes extending generally radially across said annular gap formed between said inner and outer bodies, said spokes being molded as integral portions of said valve body,

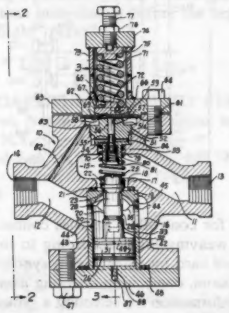
at least one of said spokes including an inlet passage for carrying fluid entering said valve and at least one other of said spokes including an outlet passage for carrying fluid exiting from said valve.

4,197,877

PRESSURE REDUCING VALVE

Michael E. Winiasz, Lorain, Ohio, assignor to The Clark-Reliance Corp., Cleveland, Ohio

Filed Jan. 5, 1978, Ser. No. 867,114
Int. Cl.² F16K *1/08*
U.S. Cl. 137—625.3 **4 Claims**



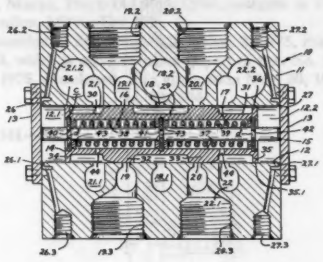
1. A valve for controlling the flow of an expandable fluid at high pressure comprising a housing having an inlet passage leading to an inlet chamber, an outlet chamber and a discharge passage leading therefrom, a partition separating the inlet chamber from said outlet chamber, an opening in said partition providing communication between said inlet chamber and said outlet chamber, means for controlling the flow of said expandable fluid through said opening comprising a valve seat positioned in said opening adjacent said inlet chamber, flow-control means disposed downstream of said partition, a valve spool slidably mounted for movement with respect to said valve seat and having a valve head extending upstream from said valve seat, said valve head having a portion adapted to make sealing engagement with said valve seat, said valve spool having a cylindrical portion downstream of said valve head, means for controlling the position of said valve spool with respect to said valve seat, said flow-control means having a plurality of radially extending circumferentially spaced internal grooves disposed downstream from said valve seat, said grooves being separated by intermediate lands having inner surfaces lying in a circle that is coaxial with said valve seat and surrounding said cylindrical portion of said valve spool, said cylindrical portion of said valve spool directing expandable fluid flowing through said valve seat to flow through said grooves when said valve head is displaced from engagement with said valve seat, said grooves extending downstream from a zone adjacent said valve seat, the downstream ends of said grooves communicating with said outlet chamber whereby the flow of fluid through the annular orifice between said valve head and said valve seat is distributed substantially uniformly throughout the circumference of said orifice and the development of zones of excessive velocity of flow is substantially prevented, said cylindrical portion of said valve spool slidably engaging and guided by said lands, said valve spool having an intermediate portion of reduced diameter as compared to the diameter of the said cylindrical portion that engages and is guided by said lands, and said intermediate portion of reduced diameter being disposed between said valve head and the said cylindrical portion that engages and is guided by said lands.

4,197,878

HYDRAULIC VALVE

Vern C. Thompson, Minneapolis, Minn., assignor to Ideus, Inc., Edina, Minn.

Filed Mar. 30, 1978, Ser. No. 891,688
Int. Cl.² F15B *13/042*
U.S. Cl. 137—625.66 **5 Claims**



1. A fluid valve comprising

a housing having an interior bore with closed ends and having a plurality of main fluid passages and control fluid passages intersecting and communicating with the interior bore to carry the main flow of fluid and the control fluid into and out of the interior bore,

an elongate valve spool in the bore of the housing and having alternate peripheral grooves and lands providing connections between the several passages, the valve spool being longitudinally shiftable in the bore under the influence of the control fluid in the bore and acting against the valve spool, the lands moving along the main fluid passages to change the connections thereto and having a sealing fit with the periphery of the bore, the valve spool having a longitudinal central opening extending entirely throughout the length thereof,

an elongate stationary anchor rod in the bore of the housing and bearing endwise against the opposite closed ends of the bore, and the rod extending through the longitudinal opening of the valve spool,

a return spring concentric of the rod and disposed within the longitudinal opening of the valve spool, the spring having means connecting opposite ends thereof with the spool and rod for returning the spool to a rest position in the bore.

4,197,879

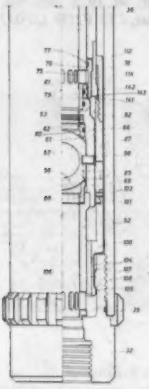
LUBRICATOR VALVE APPARATUS

David E. Young, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 3, 1977, Ser. No. 838,684
Int. Cl.² F16K *11/16*; E21B *43/12*
U.S. Cl. 137—629 **3 Claims**

1. Valve apparatus adapted for use in a well, comprising: a tubular valve body adapted for connection in a pipe string; flow passage means defining a flow pass extending longitudinally of said valve body; hydraulically operated actuator means movable relative to said body in one longitudinal direction only in response to the pressure of a first control fluid and in the opposite longitudinal direction only in response to the pressure of a second control fluid; main valve means for opening and closing said flow passage in response to longitudinal movement of said actuator means; bypass passage means including laterally directed port means in said flow passage means located above said main valve means; and bypass valve means responsive to longitudinal movement of said actuator

means for closing said port and bypass passage means when said main valve means is closed and for opening said port and bypass passage means prior to opening of said main valve means, said bypass valve means including a sleeve element slidable relatively along said flow passage means and having a first lesser diameter internal surface and a second greater diameter internal surface that are sealed respectively above and



below said port means in the closed position of said bypass valve means, a transverse cross-sectional area defined by the difference in areas bounded by said internal surfaces being subject to the pressure of fluids within said flow passage via said port means to enable shifting said bypass valve means to open position in response to a predominant pressure of fluids in said flow passage means.

4,197,880

SEALING AND INSULATING ARTICLE AND METHOD

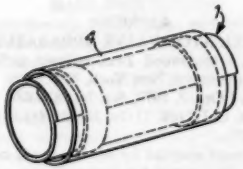
Johannes M. Cordia, Pellenberg, Belgium, assignor to N.V. Raychem S.A., Kessel-Lo, Belgium

Filed Nov. 2, 1977, Ser. No. 847,817

Claims priority, application United Kingdom, Nov. 5, 1976, 46172/76

Int. Cl.[2] F16L *55/16*; B29H *5/01*

U.S. Cl. 138—99 **18 Claims**



16. A method of sealing or insulating the surface of a substrate comprising the steps of positioning a heat-recoverable article comprising a heat-recoverable member and heat foamable material positioned in the direction of recovery of the heat-recoverable member adjacent to the surface to be sealed or insulated and heating the article to cause the heat foamable material to expand by foaming and to cause the heat-recoverable member to recover and urge the heat foamable material into engagement with the surface.

4,197,881

DEVICES FOR CONTROLLING THE HEDDLES OF A LOOM

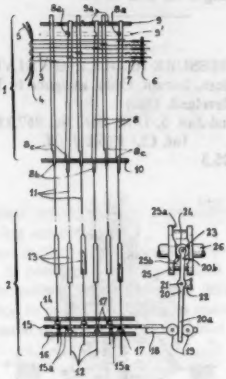
Paul Sage, Lyons, France, assignor to Verdol S.A., Caluire, France

Filed Sep. 7, 1978, Ser. No. 940,549

Claims priority, application France, Sep. 16, 1978, 77 28545

Int. Cl.[2] D03C *3/02*

U.S. Cl. 139—59 **9 Claims**



1. A device for controlling heddles connected for opening the shed in a weaving loom according to information taken from a Jacquard card by feeler means synchronized with the motion of the loom, comprising selecting means responsive to the Jacquard information for selecting a group of heddles and leaving another group non-selected; locking means moveable transversely of said heddles for locking one group of heddles and leaving the other group of heddles unlocked according to which group is selected; heddle displacing means synchronized with the motion of the loom and operative to displace said locking means longitudinally of the heddles to effect opening of the shed according to which heddles are selected and which are non-selected; a cam synchronized with the motion of the loom; a lever adjacent to the locking means and displaceable by the cam, the lever effecting transverse movements of the locking means and being oriented parallel to the displacement of the heddles when the displacing means is operative; and roller means carried by the locking means and in contact with the lever.

4,197,882

FLUID JET SHUTTLELESS LOOM WITH RESISTANCE PROVIDING MEANS FOR WEFT YARN

Kimimasa Ohnishi, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Aug. 10, 1978, Ser. No. 932,564

Claims priority, application Japan, Aug. 18, 1977, 52-98287; Czechoslovakia, Aug. 10, 1978, 151289/78

Int. Cl.[2] D03D *47/29, 47/34*

U.S. Cl. 139—435 **19 Claims**

1. A fluid jet shuttless loom, comprising:

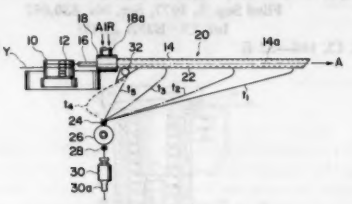
projecting means for projecting a weft yarn by the action of a fluid jet at a projection step of weft yarn, the projecting step consisting of a "free flight" period and a "measured flight" period of the projected weft yarn, the "measured flight" period following the "free flight" period;

detaining means for detaining a length of the weft yarn before projection from said projecting means, said detaining means including a tubular member in which a part of the length of the weft yarn is movably detained;

grasping means for grasping the weft yarn to stop supply of the weft yarn to said projecting means, said grasping

means releasing the weft yarn to supply it to said projecting means at the projection step; and

guide means for guiding the weft yarn from the tubular member of said detaining means; and



resistance providing means for providing a moving resistance due to sliding friction, to the weft yarn between the tubular member of said detaining means and said guide means, during a period from the "free flight" period until at least the time immediately before the beginning of the "measured flight" period.

4,197,883

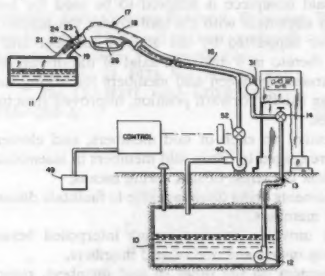
SECONDARY FUEL RECOVERY SYSTEM

Edward A. Mayer, Newburgh, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 16, 1978, Ser. No. 869,747

Int. Cl.² B65B *3/18*

U.S. Cl. 141—59 **3 Claims**



1. In a balanced system for handling and dispensing a volatile liquid, which system includes a storage reservoir holding a supply of the volatile liquid to be dispensed, a first elongated conduit means (13–16) communicated at one end with said liquid supply, and having a dispensing nozzle (17) at the conduit other end, said dispensing nozzle (17) being adapted to releasably engage the filler pipe of a liquid receiving tank (11) in a fluid tight sealed connection (24), and a second conduit means (25) communicated with said dispensing nozzle (17) to receive a flow of vapor which is displaced from said receiving tank by inflowing liquid, and pressure sensing means (33, 34) disposed in said dispensing nozzle (17) to monitor the pressure level maintained at said connection (24), the improvement in said system of;

a vapor inductor means (40) having inlet and discharge ports respectively, the latter being communicated with said storage reservoir (10),

valve means (52) communicated with said second conduit means and with said inductor inlet and including actuating means responsive to a signal delivered thereto for actuating said valve means (52) between open and closed positions whereby to regulate the flow of vapor which passes to said inductor (40) inlet,

pressure amplifying means including a fluid control means (47) communicated with a source of pressurized gas (49), and with said pressure sensing means (33, 34) respectively, to provide an actuating signal in response to a pressure differential detected by said pressure sensing means (33),

conductor means (57) communicating said valve (52) actuating means with said pressure amplifying means whereby said valve (52) will be actuated to an open position thereby allowing vapor to pass therethrough, in response to a predetermined pressure level at said dispensing nozzle connection to said filler pipe.

4,197,884

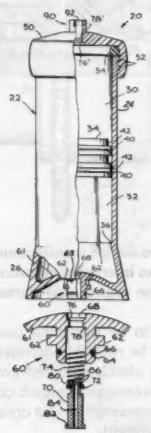
AIRLESS SPRAYER AND PRESSURIZING SYSTEM

Victor J. Maran, Playa Del Rey, Calif., assignor to Dispenser Corporation, Milwaukee, Wis.

Continuation of Ser. No. 638,763, Dec. 8, 1975, Pat. No. 4,093,123, which is a continuation-in-part of Ser. No. 567,307, Apr. 11, 1975, abandoned. This application Mar. 30, 1978, Ser. No. 891,594

Int. Cl.² B65B *3/12*

U.S. Cl. 141—383 **7 Claims**



1. A compressor for pressurizing a removable container having a pressure chamber and an intake valve on one end including an externally extending valve body and a normally closed valve member reciprocally mounted inside the valve body for selectively admitting a pressurizing gas into the pressure chamber in response to an external pressure acting thereon, said compressor comprising

a cylinder defining a compression chamber and including an open end portion adapted to internally and removably receive the container intake valve body and provide a gas tight seal therewith,

a piston mounted for reciprocating movement inside said cylinder through a compression stroke in a direction towards said open end portion to compress a pressurizing gas in said compression chamber when the container intake valve body is sealingly received inside said open end portion and subsequently through an expansion stroke in the opposite direction,

an axially extending passage in said piston communicating with said compression chamber,

a valve member mounted in said passage for axial movement and operable to close said passage during the compression stroke of said piston and to open during the expansion stroke of said piston to permit flow of pressurizing gas into said compression chamber, and

drive means for reciprocating said piston whereby the container intake valve opens in response to increasing pressure in said compression chamber during the compression stroke of said piston to admit the compressed pressurizing

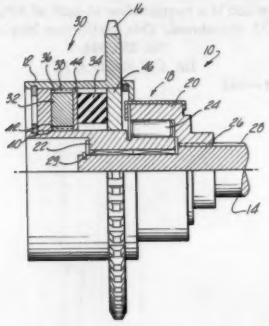
gas into the container pressure chamber and the container intake valve closes in response to decreasing pressure in said compression chamber during the expansion stroke of said piston, the container intake valve thereby also serving as an exhaust valve for said compression chamber.

4,197,885

DIRECT CRANKING STARTER DEVICE

Harold R. Mortensen, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Mar. 13, 1978, Ser. No. 886,009
Int. Cl.[2] F02N 15/00; F16D 41/06
U.S. Cl. 192—42 **8 Claims**



1. A starter drive device to interconnect a starting motor and the crankshaft of an internal combustion engine for starting the internal combustion engine, said starter drive device comprising:

driving means to be operating connected to the starting motor and to be rotatably driven by the starting motor;

an overrunning clutch mounted coaxial with said driving means, said overrunning clutch comprising:

a cam body connected to said crankshaft of the engine for rotation therewith;

a bearing race mounted coaxial with said cam body, said bearing race having one end portion and an opposite end portion, said one end portion mounted to said crankshaft intermediate said cam body and said crankshaft; and

means for bearing disposed between said cam body and said first portion of the bearing race, said bearing means interconnecting said cam body and said first portion of the bearing race to selectively engage said cam body to said bearing race when said internal combustion engine is operated below a predetermined speed;

means interconnecting said driving means and said overrunning clutch interposed said driving means and said overrunning clutch for communicating the rotatable movement of said driving means to said crankshaft of the engine, said interconnecting means further comprising:

a ring member coaxially disposed with said crankshaft of the engine, said ring member interconnecting said driving means and said opposite end portion of the bearing race, said ring member being axially and rotatably movable with respect to said crankshaft; and

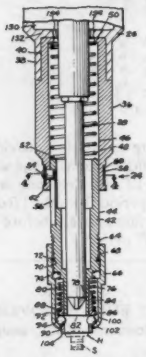
resilient means disposed adjacent to said ring member and coaxial with said crankshaft such that as said ring member moves axially upon rotation of said driving means said ring member abuts said resilient means whereby said resilient means absorbs the starting torque shock loads and subsequent rebound action of the crankshaft generated by the rotation of the crankshaft of the engine by the driving means.

4,197,886

FASTENER DRIVING TOOL AND FASTENER HOLDING NOSEPIECE

Murdo A. MacDonald, Bloomfield Hills, Mich., assignor to Clyde Corporation, Auburn Heights, Mich.

Filed Sep. 6, 1977, Ser. No. 830,652
Int. Cl.[2] B25B 23/00
U.S. Cl. 144—32 R **50 Claims**



40. In a nosepiece of the type having means forming a holder for holding an article such as a screw, an adapter member adapted to mount the holder around the driver of a tool with which said nosepiece is adapted to be used for holding the article in alignment with the tool driver, the holder including a member supported by the adapter member and movable relative thereto in a direction axial of the driver, and spring means stressed between said members for urging said holder toward an axially forward position, improved structure which comprises,

an element on each of said members, said elements being interengaged to retain said members in assembled relation against the stress of said spring means,

said elements being disengageable to facilitate disassembly of said members,

axially movable retainer means interposed between said spring means and one of said members,

said element on the other of said members, responsive to disassembly of said one member from said other member, being engageable with said retainer means to form an obstruction to axial movement thereof under said stress for retaining said spring means on said other member,

said element on said other member, responsive to assembly of said one member with said other member, being disengageable from said retainer means.

4,197,887

ROUTER GUIDE ASSEMBLY

Gerald T. Groves, 11615 South 1300 West, Salt Lake City, Utah 84065

Filed Oct. 20, 1977, Ser. No. 843,765
Int. Cl.[2] B27C 5/10
U.S. Cl. 144—136 C **5 Claims**

1. A cutting guide assembly for a router having a work face and a cutting bit extending from the work face comprising:

a base plate comprising:

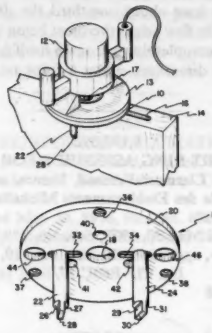
a centrally located aperture for the cutting bit;

a pair of diametrically opposed guide slots through the base plate extending radially on each side of the aperture; and

mounting means for releasably attaching the base plate to the work face of the router with the cutting bit extending through the aperture; and

a pair of cylindrical guide posts adapted to be adjustably

mounted in the guide slots and extending perpendicularly from the base plate, each guide post including a wrench engagement means on the end to accomodate adjustably



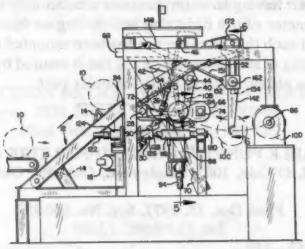
mounting the guide posts to the base plate, the wrench engagement means comprising a wrench gripping surface inside the external peripheral configuration of the guide post.

4,197,888

LOG CENTERING APPARATUS AND METHOD USING TRANSMITTED LIGHT AND REFERENCE EDGE LOG SCANNER

Arthur L. McGee, Lake Oswego; Robert A. Browning, Portland, and Lewis M. Yock, Tigard, all of Oreg., assignors to The Coe Manufacturing Company, Painesville, Ohio

Filed Feb. 21, 1978, Ser. No. 879,441
Int. Cl.² B27L *5/02*; G01B *9/02*
U.S. Cl. 144—209 A **23 Claims**



1. A method of handling and measuring a log to determine the longitudinal axis of the log and center it on a reference axis, comprising:

supporting the log adjacent to a fixed reference edge means extending longitudinally along said log and spaced a predetermined distance from a reference axis;

transmitting light past said log through the space between the reference edge means and the side of said log to produce a transmitted light image of the gap extending from the shadow of said reference edge to the shadow of said side of said log;

detecting said transmitted light image and producing electrical signals corresponding to the distance between said reference edge and the surface of said log at a plurality of longitudinal positions spaced along the length of said log;

computing from said distance signals the longitudinal axis of said log for optimum production of wood products and determining the distance said longitudinal axis is spaced from said reference axis; and

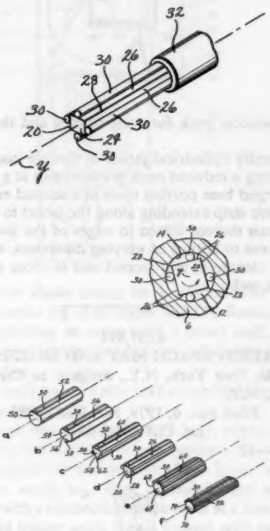
repositioning said log so that said longitudinal axis is aligned with said reference axis.

4,197,889

SECURITY SCREW, DRIVER THEREFOR, AND PROCESS

Francis C. Peterson, St. Louis County, Mo., assignor to C. Hager & Sons Hinge Manufacturing Company, St. Louis, Mo.

Filed Oct. 20, 1978, Ser. No. 953,013
Int. Cl.² B25B *15/00*
U.S. Cl. 145—50 A **21 Claims**



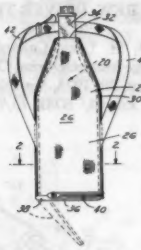
1. In combination with a screw having a substantially cylindrical drive hole extended axially within it and opening out of one of its ends, a driver for engaging the screw at the drive hole and turning the screw, the driver comprising an elongated shank that is fitted into the cylindrical drive hole and has at least one camming surface that faces the cylindrical wall of the hole, the camming surface being eccentric with respect to the axis of the cylindrical hole so that it is located at varying distances from that axis and from the cylindrical side wall, an elongated gripping element extended along the shank generally parallel to the shank and having a different cross-sectional configuration than the shank, the gripping element being within the cylindrical hole alongside the shank and further being normally centered along that portion of the camming surface that is farthest from the cylindrical wall of the hole and when in that position, the combined width of the shank and gripping element being such that the driver may be easily inserted into or withdrawn from the drive hole, the gripping element being capable of shifting laterally with respect to the camming surface sufficiently to become lodged between the cylindrical wall of the hole and the camming surface of the shank, whereby when the shank is turned while the gripping element remains generally in place along the cylindrical wall of the hole, the gripping element will become lodged between the cylindrical wall and the camming surface and the torque applied to the shank will be transferred to the screw.

4,197,890

INSULATING JACKET FOR BOTTLES

James F. Simko, 620 E. Lincoln, Royal Oak, Mich. 48067

Filed Dec. 18, 1978, Ser. No. 970,621
Int. Cl.[2] B65D *23/08*
U.S. Cl. 150—2.2 6 Claims



1. An insulation pack for wine bottles and the like which comprises:
(a) a generally cylindrical jacket of flexible insulation material having a reduced neck portion open at a first end and an enlarged base portion open at a second end,
(b) an elastic strip extending along the jacket in the direction of the axis thereof joined to edges of the jacket to allow adjustment to bottles of varying diameters, and
(c) a base closure at said second end to close said jacket at the base end.

4,197,891

COMBINATION BEACH MAT AND SHOULDER BAG

June Comollo, New York, N.Y., assignor to Cerenique, Inc., New York, N.Y.

Filed Apr. 6, 1979, Ser. No. 27,889
Int. Cl.[2] A45C *9/00*
U.S. Cl. 150—12 5 Claims

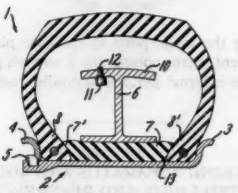
1. A combination beach satchel and beach mat construction comprising a sheet of a flexible material having a reverse face and obverse face; a substantially continuous loop of a flexible material secured along two substantially parallel longitudinal portions to a substantially central portion of the obverse face of the sheet, a free-standing loop portion extending from either end of the secured parallel portions, one loop portion extending beyond a first end of the sheet, the secured portions extending longitudinally from a location at least about 10 percent of the distance from the first end to the second end to a location at least about 33 percent of the distance from the second end to the first end; first flexible fastening means secured to a first edge of the reverse face of the sheet and second mating flexible fastening means secured to an intermediate portion of the obverse face of the sheet, the fastening means extending longitudinally from a location distant from the first and second ends of the sheet at least about 10 percent of the full length of the sheet, the second fastening means being secured to the obverse face intermediate the second edge and the secured parallel portions, and at least about one-third the distance from the second edge to the first edge; the sheet being sufficiently flexible so as to fold completely over upon itself in both the lateral and longitudinal directions, under a force no greater than its own weight.

4,197,892

SUPPORT RING ASSEMBLY FOR TIRES

Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed May 30, 1978, Ser. No. 910,761
Claims priority, application France, Jun. 10, 1977, 77 18123
Int. Cl.[2] B60C *17/04*
U.S. Cl. 152—158 6 Claims



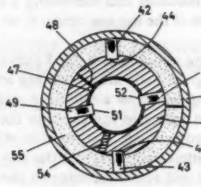
1. Support ring assembly for tubeless tires comprising a rigid ring having an outer diameter less than the inner diameter of the tire tread when the tire is under load and having an inner diameter greater than the outer diameter of the cylindrical wheel rim, characterized by the fact that said assembly further comprises at least one solid annular part of elastic material which is mountable between the rim and the rigid ring, the annular part having an outer diameter substantially equal to the inner diameter of the rigid ring and having an inner diameter and width such that after the tire has been mounted on the rim, the fastening of said assembly on the rim is assured by compression of the elastic material of the annular part.

4,197,893

REUSEABLE PUNCTURE SHIELD FOR TIRE CASINGS

Bernard J. O'Coin, 1087 Tanglewood, Oakville, Ontario, Canada

Filed Dec. 15, 1977, Ser. No. 860,852
Int. Cl.[2] B60C *17/00*
U.S. Cl. 152—310 5 Claims



1. A reuseable puncture shield for use in a flexible tire casing having an outer tread portion and an inner concave surface thereto, and wherein the pair of side walls of said tire casing each have a minimum and a maximum flex point thereto, and wherein said shield is held in contact with the inner surface of said casing by a pneumatic tube disposed within the casing in the annular space above the shield, comprising in combination;

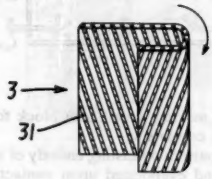
a compressible ring of high density foam rubber convex in cross-section and having an outer peripheral surface mating with the concave inner surface of the casing and an inner peripheral surface mating with the outer surface of the tube the outer peripheral surface of said ring co-operating and converging with the inner surface of the casing to define a tapered flap along each side wall of said casing, each flap terminating below the maximum flex point of said casing walls.

4,197,894

CABLE REINFORCED PNEUMATIC TIRES

Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements, Clermont-Ferrand, France

Filed May 20, 1976, Ser. No. 688,470
Claims priority, application France, May 26, 1975, 75 16371
Int. Cl.² B60C *9/02*
U.S. Cl. 152—361 FP **3 Claims**



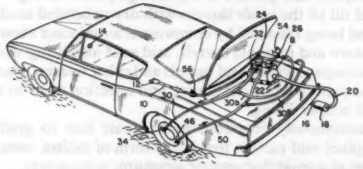
3. In a metal cable for tire reinforcement, the visible outer layer of which cable is formed of strands and each strand is formed of at least two elementary wires, the improvement which comprises the strands of the said outer layer have a pitch which is less than the pitch of the elementary wires constituting said strands, these two pitches being of the same direction (S or Z); the cable has a multi-wire core around which a layer of strands is arranged and the cable, the strands and the core are all of the same type (S or Z).

4,197,895

TRACTION DEVICE FOR MOTOR VEHICLES

Jose V. Reyes, 2874 Broxon La., Boise, Id. 83705

Filed Oct. 2, 1978, Ser. No. 947,535
Int. Cl.² B60C *29/00*
U.S. Cl. 152—416 **2 Claims**



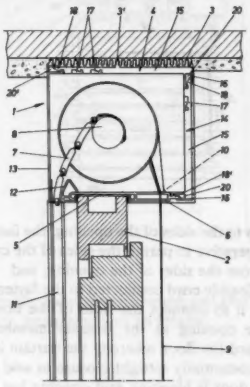
1. A traction device for an internal combustion powered vehicle provided with a hot exhaust pipe for combusted gases operated by heating the tires of the vehicle, comprising an air pressure pump having an inlet and an outlet, an inlet hose connecting said exhaust pipe with the pump's inlet, an outlet hose detachably connecting said outlet with the interior of the tire through an inlet valve, said tire being provided with an exhaust valve, a cold air exhaust hose detachably secured to said exhaust valve with one end, a temperature gage mounted on said pump, said exhaust hose having its other end connected to said temperature gage, and said temperature gage having an outlet valve for cold air, a pressure gage communicating with said temperature gage and mounted on said pump and means connecting the pump to a power source.

4,197,896

WINDOW SHADE CASING

Hans U. Reichstadt, Schwarzbachstr. 41, 4020 Mettmann, Fed. Rep. of Germany

Filed Apr. 7, 1978, Ser. No. 894,372
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2715909; Apr. 9, 1977, 2715910
Int. Cl.² E06B *3/32, 9/08, 9/17*
U.S. Cl. 160—107 **14 Claims**



1. A window shade casing for a window, the latter being above a horizontal leg of an upper window frame, comprising
a casing including an outer wall, a cover wall, a side wall, and a casing bottom respectively releasably connected to one another,
said cover wall and said side wall comprise identical angular shaped members,
said side wall and said cover wall have edges engaging on the casing and hooking in one another,
each said angular shaped members has a longer angle leg and a shorter angle leg, each of said longer angle legs is formed with a connection catch hook at a free end thereof,
each of said longer angle legs is formed with recesses on an inner wall side thereof, said recesses are disposed spaced apart one after the other in the form of a row, said recesses at least in part have the profile of said connection catch hook and form nominal separation positions adapted for shortening of the longer angle leg leaving a catch hook at a free end of the latter,
said catch hook has a triangularly shaped cross-section and is formed tapering toward the free edge,
said shorter angle leg has an inner groove wall and an outer groove wall spaced therefrom forming an engagement groove therebetween, said outer groove wall is shorter than said inner groove wall,
said inner groove wall is formed on a free end thereof with a shoulder, said shoulder engages in back of one of said catch hooks in an assembled position of said walls.

4,197,897

CLOSURE FOR BUILDING OPENING

Richard S. Correa, 14315 24 Mile Rd., Mt. Clemens, Mich. 48043

Filed Jun. 12, 1978, Ser. No. 914,661
Int. Cl.² E06B *3/48*
U.S. Cl. 160—113 **6 Claims**

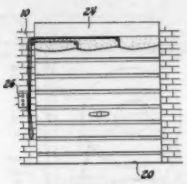
1. In a building having means defining an opening, and a roll-up door blocking said opening, a combination comprising:
flexible curtain means mounted adjacent said roll-up door and having a pair of sides defining a curtain width accomodating the width of said opening, and a height ac-

comodating the distance between the top and the bottom of the opening;

means attaching the upper end of said curtain to the top of the opening such that the opposite, bottom end of the curtain is movable from a lower position adjacent the bottom of the opening toward an upper position;

means for raising the curtain from said lower position to said upper position;

fastener means including a fastener member, connecting the



curtain sides to the sides of the opening, the fastener member being operative to permit the sides of the curtain to be separated from the sides of the opening; and

an elongated flexible cord connected to the fastener member for moving it to connect the sides of the curtain to the sides of the opening as the fastener member is being moved toward the floor whereby the curtain is operative to form a substantially airtight closure in said opening as said roll-up door is blocking said opening but permitting air to pass therethrough.

4,197,898

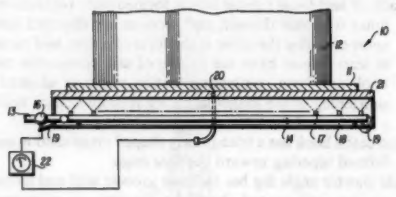
CONTROLLED COOLED MOLD CAR AND METHOD FOR THE ELECTROSLAG REMELTING PROCESS

Samuel L. Miller, Honey Brook, Pa., assignor to Lukens Steel Company, Coatesville, Pa.

Continuation of Ser. No. 729,947, Oct. 6, 1976, abandoned. This application Aug. 21, 1978, Ser. No. 935,160

Int. Cl.² B22D *27/02*

U.S. Cl. 164—4 **8 Claims**



1. A method of controlling the temperature at the base of an open bottom ESR mold and preventing the formation of butt cracks in the bottom of an ingot formed in said open bottom ESR mold in the ESR process which comprises the steps of providing a thermo-responsive means immediately adjacent the underside of a starter plate covering the separate mold floor at the base of said mold, said starter plate being completely under said mold whereby the lower edges of said mold are engaged and supported by said plate, the underside of said starter plate being completely engaged and supported by said separate mold floor, reflecting said thermo-response to a fluid-flow control means, and applying said controlled flow fluid in a liquid spray in an even distribution to substantially the entire underside of said mold floor within a confined space provided thereunder whereby said starter plate on said mold floor is uniformly cooled by said spray via conduction from said mold floor, said fluid gravitating from the underside of said separate mold floor and being removed from said space under said mold floor upon having been sprayed against the underside of said separate mold floor.

4,197,899

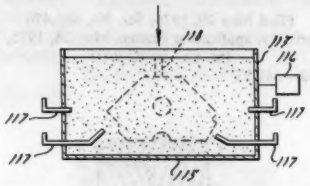
METHOD OF CASTING A LOW WEIGHT RECIPROCATING ENGINE

Robert P. Ernest, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 753,347, Dec. 22, 1976, Pat. No. 4,136,648. This application Sep. 6, 1977, Ser. No. 831,205

Int. Cl.² B22C *9/04*

U.S. Cl. 164—34 **2 Claims**



1. A method of making a cast iron block for an internal combustion engine, comprising:

(a) form a block pattern consisting entirely of a material that is consumed and evaporated upon contact with molten cast iron, said pattern having first wall portions defining at least one series of uniformly thin walled barrels, each barrel being tangentially connected in consecutive order to the next adjacent barrel, said first wall portions presenting a continuous undulating outwardly facing side surface which is unconnected except at said tangential connection, said pattern further having second wall portions defining a series of overlapping integral thin wall barrel section interrupted and overlapped in a manner so that the interior surfaces of said second wall portions form an opposing surface complimentary to that of the outwardly facing surface of said wall portions but uniformly spaced therefrom, said pattern having a flat top deck defined by the terminal ends of upright first and second wall portions, said block pattern having third wall portions commonly joining said first and second wall portions to form a closure at the bottom end of said spacing, the block pattern also having an integral gating system adapted to extend to the exterior of the molding system,

(b) suspend said pattern in a molding system having a flask, and fill all the voids therein with dry unbonded sand, said sand being fluidized by compressed air injected about said pattern and into said barrels, said sand also being vibrated to compact within said barrels and other interior spaces of said pattern while continuing said injection of air to maintain proper filling,

(c) continuously introduce molten cast iron to gradually displace said pattern first in the form of molten metal and then as a solidified casting structure.

4,197,900

FURNACE FOR VACUUM ARC MELTING OF HIGHLY REACTIVE METALS

Vladimir V. Bloshenko, ulitsa Severnaya, 36, kv. 6, Odintsovo Moskovskoi; Semen M. Beizerov, ulitsa B. Akademicheskaya, 73, korpus 2, kv. 72, Moscow; Alexandr N. Derjugin, ulitsa Severnaya, 54, kv. 121, Odintsovo Moskovskoi, and Vladimir A. Ilin, I Mosfilmovsky pereulok, 16, kv. 32, Moscow, all of U.S.S.R.

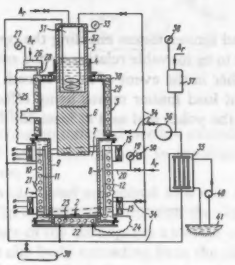
Filed Mar. 16, 1978, Ser. No. 887,228

Int. Cl.² B22C *27/02, 27/04*

U.S. Cl. 164—147 **5 Claims**

1. A furnace for vacuum arc melting highly reactive metals,

comprising: a cooled mould, a detachable cooled bottom plate tightly sealing the bottom of said cooled mould, and a cooled vacuum chamber fitted with a cover tightly sealing the top of said cooled mould; said mould, bottom plate, and vacuum chamber each having outer and inner walls defining cooling spaces filled with a liquid-metal cooling agent and circulating means; and electrode holder containing a cooling space filled with a liquid-metal cooling agent, said electrode holder being movably mounted in the cover of said vacuum chamber; each of the aforesaid cooling spaces having tubular heat exchangers disposed within them, said tubular heat exchangers communicating with a common heat transfer circuit and filled with a liquid cooling agent chemically neutral to the liquid-metal cooling agent and to water; a shield made in the form of a



closed hollow cylindrical wall filled with an inert gas, and disposed between the inner wall of said cooled mould and its tubular heat exchanger; an expansion chamber communicating with the cooling spaces of said vacuum chamber, cooled mould and bottom plate; metal strips disposed between the shield and the outer wall of said cooled mould and arranged along a helical line to form channels at the upper and lower sections of the cooling space of said cooled mould; electromagnetic superchargers mounted on the exterior of said cooled mould opposite the channels formed by said metal strips, which serve to circulate the liquid-metal cooling agent along the helical channels and throughout the cooling spaces; electrocontact sensing means secured on the lower portion of said hollow shield to monitor the integrity of the furnace walls.

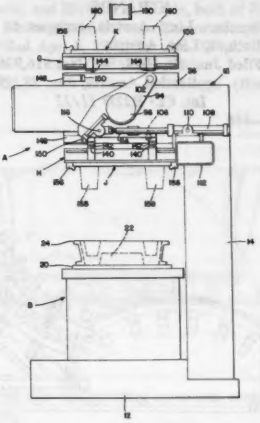
4,197,901

FOUNDRY SAND MOLDING APPARATUS

Edward D. Abraham, Brecksville, Ohio, and Rodney L. Hartung, Muscatine, Iowa, assignors to Carver Foundry Products, Muscatine, Iowa

Filed Mar. 20, 1978, Ser. No. 888,381
Int. Cl.² B22C *15/34*
U.S. Cl. 164—154 **20 Claims**

1. An apparatus comprising a head rotatably indexible about a substantially horizontal axis and having a passage for supplying sand therethrough, a plurality of baffles extending across said passage for varying the distribution of sand flowing through said passage, said baffles including a plurality of spaced first baffles extending across said passage in one direction and a plurality of spaced second baffles extending across said passage substantially perpendicular to said first baffles and each said baffle being individually adjustable rotatably about



an axis generally parallel to its length and also being adjustable in a direction transversely of its length.

4,197,902

MOLDS FOR CONTINUOUS CASTING OF METALS

Wolfgang Von Jan, Windeck-Schladern, and Horst Gravemann, Osnabrueck, both of Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshuette AG, Fed. Rep. of Germany

Filed Jul. 28, 1977, Ser. No. 819,773
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 2634633
Int. Cl.² B22C *3/00*; B22D *11/00*; B28B *7/36*
U.S. Cl. 164—418 **1 Claim**

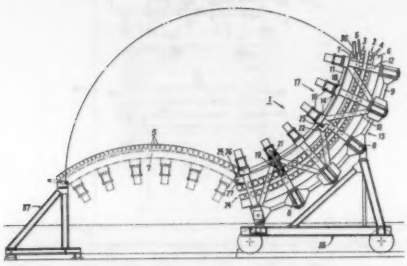
1. In a mold for continuous casting of high melting temperature metals, which is formed of a copper or copper alloy mold body of high thermal conductivity and a wear resistant layer of a different metal forming the casting surface of the mold, the improvement comprising:

said wear resistant layer being nickel having dispersed therein solid particles of silicon carbide of a particle size from 5 to 50 μm for increasing the wear resistance of such nickel layer, said nickel layer having a thickness of 0.1 to 1.5 mm and being formed by electrolytic deposition to provide a nonporous casting surface securely bonded to said mold body, whereby a minimum reduction in thermal conductivity through the mold as a result of the inclusion of the high wear resistance layer is achieved concurrent with an increase in the wear resistance of the casting surface.

4,197,903
ARCUATE SUPPORTING AND GUIDING CONSTRUCTION FOR CONTINUOUSLY CAST STRANDS

Werner Scheurecker, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 19, 1978, Ser. No. 916,926
Claims priority, application Austria, Jun. 28, 1977, 4558/77
Int. Cl.[2] B22D *11/12*
U.S. Cl. 164—448 8 Claims



1. In an arcuate supporting and guiding construction for continuously cast strands of the type including a supporting framework having an upper end and a lower, run-out end, a set of inner arcuate longitudinal carriers and a set of outer longitudinal carriers positioned within the supporting framework, a plurality of rollers mounted in each of the sets of longitudinal carriers to form an arc inner roller path and an arc outer roller path for supporting said continuously cast strands on opposing sides thereof, said supporting framework being comprised of two parts, one of said two parts being an arc outer framework part carrying said arc outer roller path, and the other one of said two framework parts being an arc inner part carrying said arc inner roller path, and a plurality of drawing anchors arranged at a distance from one another and at right angles to the arcuate roller paths for detachably connecting said two parts of said supporting framework, the improvement comprising pivot axle means arranged on said arc outer framework part at the lower, run-out end thereof, said arc inner part being pivotable about said pivot axle means in the arc plane of the outer framework part.

4,197,904
SUPPORT GUIDE ARRANGEMENT FOR A CONTINUOUS CASTING INSTALLATION

Hans Streubel, Düsseldorf, Fed. Rep. of Germany, and Heinrich Marti, Forch, Switzerland, assignors to Schloemann-Diemag AG, Düsseldorf, Fed. Rep. of Germany and Concast AG, Zurich, Switzerland

Filed Aug. 29, 1978, Ser. No. 937,793
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1977, 2740221
Int. Cl.[2] B22D *11/12*
U.S. Cl. 164—448 6 Claims

1. A support guide arrangement for a continuous casting installation for strands comprising:

oppositely situated traverses arranged in spaced relationship from one another;

rolls mounted by roll bearings at each of the oppositely situated traverses;

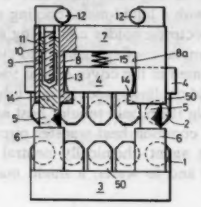
guide means;

at least one of the oppositely situated traverses being provided with yokes adjustable along the guide means;

spindles cooperating with the yokes for adjustment of the yokes along the guide means;

means for pivotably guiding said at least one traverse at the yokes about an axis extending essentially parallel to the rolls of said at least one traverse;

said means for pivotably guiding including stop means mounted at said yokes for limiting the positional shifting of said at least one traverse with respect to a reference path of travel of the continuously cast strand;



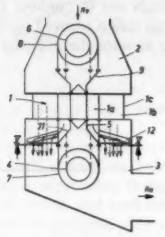
resilient load limiter means enabling the oppositely situated traverses to be movable relative to one another away from one another in the event of an overload; and

said resilient load limiter means being effectively arranged between the yokes and said at least one traverse.

4,197,905
REGENERATIVE-AIR PREHEATER

Wilhelm Gollnick, and Ernst Wirz, both of Ratingen, Fed. Rep. of Germany, assignors to Balcke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,387
Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721061
Int. Cl.[2] F28D *17/00*
U.S. Cl. 165—4 4 Claims



1. In a regenerative air preheater with dome-like guide devices serving for the supply and discharge of flue gas as well as for air to be heated from at least two separated partial streams and with a heat exchanger body, the latter alternately, by means of a relative movement between the guide devices and heat exchanger body, has passed through it heat emitting flue gas and the air to be heated, whereby the temperature of the separated partial streams of air is regulatable, the improvement comprising

a cover cap being arranged, in a region of a partial stream of the flue gas on the discharge side of the flue gas from the heat exchanger body, between the dome-like guide devices for the air to be heated,

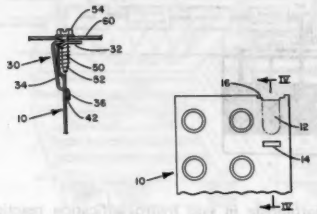
said cover cap being formed with a plurality of individual exhaust channel means for transferring said partial stream of flue gas into another partial stream of flue gas.

4,197,906

MOUNTING CLIP FOR A TUBE SHEET

Brad G. Leech, and Richmond S. Hayes, Jr., both of Fayetteville, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 23, 1978, Ser. No. 889,579
Int. Cl.[2] F28F 7/00
U.S. Cl. 165—76 10 Claims



1. A joint including:

a tube sheet having an indented portion extending from the edge thereof and a slot located in proximity to the indented portion;

a clip having a clip head connected to a clip tail by a clip body, said clip tail extending through the slot such that a support surface of the tail engages a surface of the sheet at the slot, said clip body extending from the clip tail on the side of the sheet to which the indented portion extends to the clip head, the clip head extending across the end of the tube sheet and having a screw opening therein;

a plate angled from the sheet to which the sheet is to be connected; and

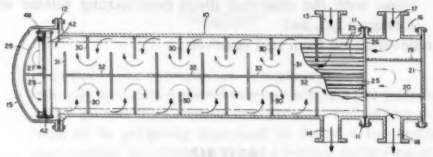
a screw extending through the member into the screw opening of the clip whereby upon the screw being tightened, the screw threads engage the clip and consequently the sheet through the support surface of the clip tail and the screw threads further engage the surface of the tube sheet at the indented portions to secure the sheets to the member.

4,197,907

FLOATING HEAD SUPPORT SYSTEM FOR SHELL AND TUBE HEAT EXCHANGER

Hosea E. Smith, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 5, 1978, Ser. No. 893,737
Int. Cl.[2] F28F 9/12
U.S. Cl. 165—76 5 Claims



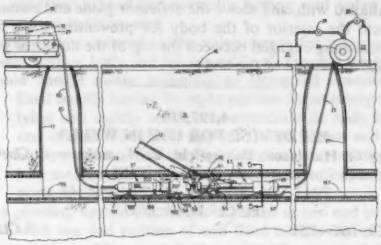
1. In a shell and tube heat exchanger having a floating head and a floating tube sheet to which said floating head is connected during the assembly of said exchanger and having tubes connected to said tube sheet, the improvement which comprises a positioning support member extending outwardly from the face of said tube sheet near the upper end thereof in a direction opposite said tubes and means within said floating head adapted for mounting said head on said positioning support member and adapted for sliding the head into its proper position adjacent said tube sheet.

4,197,908

APPARATUS FOR PORTING A SIDE WALL OF A CONDUIT FROM INTERIORLY THEREOF

Edward M. Davis, and Richard A. Bowie, both of Fresno, Calif., assignors to Underground Surveys Corporation, Fresno, Calif.

Filed Apr. 6, 1978, Ser. No. 894,122
Int. Cl.[2] E03F 3/06
U.S. Cl. 166—55 15 Claims



13. A conduit side wall porting apparatus comprising:

A. a carriage,

B. means for positioning the carriage longitudinally internally along such a conduit to successive porting positions,

C. a port forming tool mounted on the carriage for adjustable movement to and from a conduit engaging position,

D. a pneumatically driven motor connected to the tool having an intake and an exhaust with said exhaust being directed toward said conduit engaging position, and

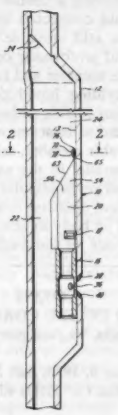
E. a source of gas under pressure connected to the intake for passage of the gas through the motor and out the exhaust to said conduit engaging position to blow debris resulting from operation of the tool therefrom.

4,197,909

PROTECTOR FOR A DEFLECTOR GUIDE OF A MANDREL

Ben D. Terral, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Dec. 15, 1978, Ser. No. 969,764
Int. Cl.[2] E21B 7/06
U.S. Cl. 166—117.5 6 Claims



1. In a mandrel for use in a well tubing having a body with an open bore extending therethrough and an offset bore adjacent the open bore, an opening through the body in communication with the offset bore, a valve pocket positioned inside the

body in the offset bore beside the body opening and secured to the body, a deflector guide connected to the pocket and extending upwardly and outwardly from the open bore for providing a deflector guide, and a locking lug positioned above the pocket, the improvement in a protector for preventing tools from becoming engaged between the deflector guide and the inside of the body comprising,

a protrusion connected to the body at a position adjacent to, aligned with, and above the deflector guide and extending into the interior of the body for preventing tools from becoming engaged between the top of the deflector guide and the inside of the body.

4,197,910

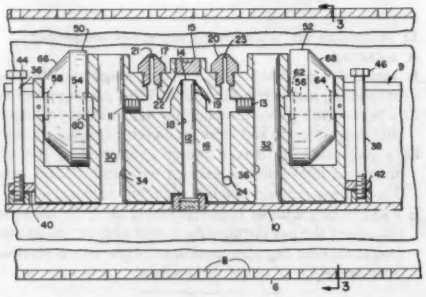
JET DEVICE FOR USE IN WELLS

Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 31, 1978, Ser. No. 892,442

Int. Cl.[2] B08B *3/00*

U.S. Cl. 166—223 **7 Claims**



1. Apparatus for use in cleaning wells comprising an elongated member adapted to be run into a well to a location where cleaning is desired, a stationary member connected to said elongated member, a movable member slidably connected to said stationary member for movement perpendicular to centerline of said elongated member in response to liquid pressure applied between said movable member and said stationary member, a jet body having a central jet-forming opening for forming a jet of liquid connected to said movable member, passageway means in said movable member forming liquid communication to said jet-forming opening and to a location between said movable member and said stationary member, a liquid inlet port providing liquid communication into said passageway means from outside said movable member and said stationary member, and at least one wheel member rotatably mounted on said movable member, said wheel member having an axis of rotation parallel to the axis of elongation of said elongated member and perpendicular to said stationary member and having sufficient diameter to extend beyond said movable member and said jet body so as to be engageable against a well liner and to provide jet stand-off therefrom.

4,197,911

PROCESS FOR IN SITU COAL GASIFICATION

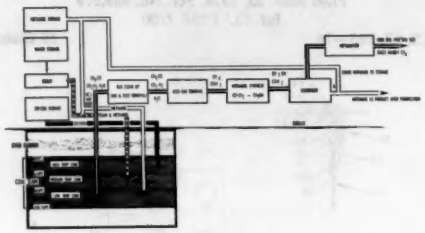
Harish R. Anada, Vienna, Va., assignor to Ramcor, Inc., Vienna, Va.

Filed May 9, 1978, Ser. No. 904,445

Int. Cl.[2] E21B *43/24*

U.S. Cl. 166—261 **10 Claims**

1. A process for in situ gasification of coal to produce a combustible methane rich product gas which comprises injecting a lower aliphatic alcohol into an underground coal seam, raising the temperature of the seam sufficiently to cause vaporization and dissociation of the alcohol into carbon monoxide and nascent hydrogen and initiate a hydrogasification reaction, within the coal seam, and injecting water into the seam to react with the coal to form additional carbon monoxide and hydrogen which participate in said hydrogasification reaction to produce said product gas.



4,197,912

OIL RECOVERY VIA SILICONE INTRODUCTION

James L. Barnhouse, Victoria, Tex., assignor to John C. Thompson and Craig W. Thompson, both of Victoria, Tex.

Filed Dec. 21, 1978, Ser. No. 972,006

Int. Cl.[2] E21B *43/22*

U.S. Cl. 166—305 R **5 Claims**

1. An improved method of recovering oil from an oil and gas reservoir comprising

introducing an effective amount of a silicone-containing composition into said reservoir, said silicone having at least an

grouping, a low interfacial tension towards oil, capable of being stably and finely dispersed in crude oil, possessing antifoaming characteristics with regard reservoir fluids, and not substantially interfering with the desired properties of crude oil,

dispersing said silicone-containing composition within the reservoir,

capping said reservoir for an effective period of time permitting further interaction of the silicone-containing composition with the reservoir fluids precipitating release of entrained gas, and

recovering oil from said reservoir.

4,197,913

USE OF PHOSPHOGYPSUM FOR FIRE SUPPRESSION

Theodore F. Korenowski, Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jul. 10, 1978, Ser. No. 922,959

Int. Cl.[2] A62C *3/02, 1/08*

U.S. Cl. 169—45 **10 Claims**

1. A method of suppressing fires comprising applying an effective amount of a fire suppression composition comprising particulate phosphogypsum to an inflammable material and its surrounding environment to suppress said fire.

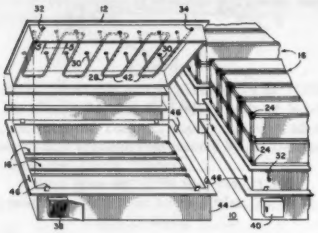
6. The method of claim **1** wherein said inflammable material comprises forests, shrubbery and grass.

4,197,914

DAMAGE CONTROL SYSTEM FOR CARGO VESSELS

Vincent G. Grey, Box 763A, R.D. 2, Sussex, N.J. 07461

Filed Jul. 6, 1978, Ser. No. 922,207
Int. Cl.[2] A62C *35/12*
U.S. Cl. 169—51 13 Claims



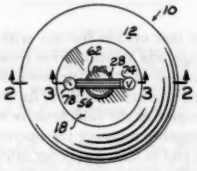
1. A control system for ships having a hold below decks adapted to receive cargo and a hatch cover having a cavity therein movable to a position for securing an opening into said hold and when in said securing position isolating said hold from the deck, said control system including a conduit for carrying a fluid, said conduit having a plurality of openings located along its length between its ends, means for supporting said conduit within said cavity of said hatch cover, and means for communicating a fluid to said conduit thereby to exit each of said openings whereby said fluid exiting said openings provides a field of coverage below said hatch cover and at least coextensive with said opening into said hold for fighting a fire in said hold inaccessible to conventional fire fighting equipment.

4,197,915

SELF-RIGHTING THROWN OR ROLLED SPHERICAL FIRE EXTINGUISHER

Eoudis Martin, 812 NE. 17, Oklahoma City, Okla. 73105

Filed Sep. 29, 1978, Ser. No. 947,282
Int. Cl.[2] A62C *13/46*
U.S. Cl. 169—72 1 Claim



1. A portable fire extinguisher, comprising:

a generally spherical hollow body containing a fire retardant under greater than atmospheric pressure and having portions of its periphery truncated to define a top surface surrounding an exhaust port and a bottom surface parallel with the top surface;

a layer of dense material within said hollow body overlying at least the inner surface of said bottom surface for normally biasing said hollow body toward a position of repose with its top surface disposed upwardly;

exhaust valve means normally closing the exhaust port,

said exhaust valve means including a centrally bored cylindrical valve body communicating with the exhaust port and connected at one end to said top surface and having a concentric recess formed in its connected end defining a valve seat facing toward the exhaust port,

said valve body having a counterbore at the inward limit of the valve seat and having a plurality of radially disposed vents communicating with the counterbore,

a valve having a head movable toward and away from the valve seat for opening and closing the valve body bores and having a valve stem slidable within the valve body bores and projecting beyond the end of said valve body opposite its connected end, and,

a valve spring interposed between said top surface and said valve head for normally biasing said valve to a closed position; and,

handle means secured to the valve means for transporting said hollow body and biasing said valve means open,

said handle means including an elongated channel-like fixed handle having its bight portion transversely overlying and rigidly secured intermediate its ends to the end of said valve body opposite its valve seat and having an aperture in its bight portion surrounding an intermediate portion of the outwardly disposed end portion of said valve stem, and,

a pivoting handle pivotally connected at one end portion with one end portion of said fixed handle in overlying relation with respect to the outwardly disposed end of said valve stem for pivoting movement toward and away from said fixed handle,

said pivoting handle having an outstanding prong formed on its end opposite its pivotally connected end,

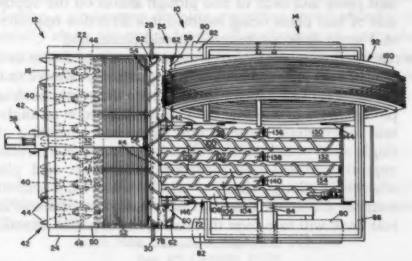
said fixed handle having an inverted J-shaped hook formed on its end portion opposite its connection with said pivoting handle for locking engagement with said prong.

4,197,916

ROOT CROP HARVESTER

Virgil D. Haverdink, Ankeny; John E. Maust, Jr., Des Moines, and Fred C. Livesay, Jr., Ankeny, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sep. 29, 1978, Ser. No. 947,181
Int. Cl.[2] A01D *17/16*
U.S. Cl. 171—58 22 Claims



1. In a root harvester comprising: a mobile processing chassis having a frame with transverse and fore-and-aft extending frame members joined together, a fore-and-aft extending root conveyor composed of at least one pair of flighted and cooperating counter-rotating rolls, means supporting said rolls at their rearwad ends in vertically spaced relation to one another; a header assembly having a frame structure with transverse and fore-and-aft extending frame members. root-digging means carried by the frame structure for lifting roots from the ground, a transverse roll conveyor having a plurality of cooperating grab rolls spaced rearwardly of the digging means for receiving roots lifted by the digging means and for conveying said roots toward an elongated discharge opening adjacent the terminating end of one grab roll; and means for removably attaching the header assembly to the processing chassis including connecting means for rigidly joining fore-and-aft extending members of the processing chassis and header assembly together, bracket means depending from the processing chassis, first support means carried by the bracket means for rotatably

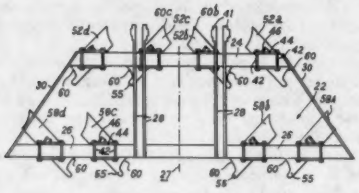
supporting said terminating roll, and second support means carried by the bracket means for rotatably supporting the forward ends of the cooperating rolls vertically below their respective rearward ends.

4,197,917

SOIL STABILIZER INCLUDING TWO BANKS OF PLOUGH SHARES

Terrence R. Langford, 27 Bluegum Ave., Bordeaux, Randburg 2194, and Ernest L. Rehm, P.O. Box 3, Walkerville 1876, both of South Africa

Filed Mar. 20, 1978, Ser. No. 888,471
Int. Cl.² A01B *3/26*; E02F *3/76*
U.S. Cl. 172—686 **12 Claims**



1. A soil stabilizer for mixing soil comprising

a frame having means for connecting said frame to a prime mover for movement in a given direction;

a forward bank of plough shares mounted on said frame, said plough shares being at least four in number, each said plough share consisting of a single mold board inclined at an angle to a central longitudinal plane of said frame with a front edge being directed in one direction relative to said plane, said one direction being one of the directions of toward and away from said plane;

each of said plough shares on one side of said central longitudinal plane being inclined in the same direction relative to said plane and each of said plough shares on the opposite side of said plane being inclined in a direction opposite to said same direction relative to said plane; and

a rear bank of plough shares mounted on said frame to the rear of said forward bank of plough shares relative to the movement of said frame in said given direction, each said plough share of said rear bank being inclined at an angle to said longitudinal plane of said frame and consisting of a single mold board with a front edge directed in a direction opposite to said one direction relative to said plane whereby a plough share of said forward bank will turn over the soil in one direction and a following share of said rear bank will turn over that soil in the opposite direction.

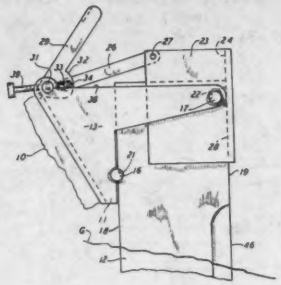
4,197,918

SUBTERRANEAN PLOW BLADE

James S. Flippin, Clearwater, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Jun. 12, 1978, Ser. No. 914,884
Int. Cl.² A01B *35/26*
U.S. Cl. 172—699 **6 Claims**

1. A plow blade assembly comprising a blade having a leading edge and a trailing edge for movement through the ground, a blade holder including pivotly connected pieces for releasably securing said blade to said holder, a first one of said pieces extending around said blade and into contact with said edges of said blade, a second one of said pieces being pivotly connected with said first one of said pieces and extending into contact with said blade, a third one of said pieces pivotly connected between said first one and said second one of said pieces, the location of the contact between said second one of said pieces and said blade and the location of said pivot connection between said third one and said first one of said pieces being on opposite sides of the pivot connection between said first one and said second one of said pieces, and a lever attached to said third one of said pieces for forcing on said third one of said



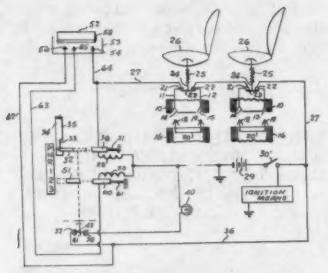
pieces and thereby force said first one and said second one of said pieces into clamp relation with said blade.

4,197,919

SEAT BELT SAFETY SYSTEM FOR MOTOR VEHICLES

Benjamin Redmond, 520 E. 77th St., New York, N.Y. 10021

Filed Mar. 28, 1978, Ser. No. 890,981
Int. Cl.² B60R *21/10*
U.S. Cl. 180—269 **6 Claims**



1. A safety seat belt system for use with a motor vehicle having an engine ignition system, drive train means including control means therefor shiftable between an engine starting position and at least one drive position, for transmitting power from the vehicle engine to the vehicle drive wheels, safety seat belt means for releasably securing the operator to the driver's seat of the vehicle and at least one other safety seat belt means for releasably securing a passenger to a passenger's seat of the vehicle, said safety seat belt means each including a pair of separable seat belt sections, the sections of each pair being adapted to be releasably connected together and providing an electrical circuit through at least one section of the pair when connected; means normally locking said control means in the engine starting position; switch means associated with the driver's seat and other switch means associated with said passenger seat, each said switch means being responsive to the weight of the seat occupant so as to be closed when the associated seat is unoccupied and open when the associated seat is occupied; normally de-energized first solenoid means in electrical circuit with the engine ignition system, with each of said switch means and with the electrical circuits of said seat belt sections, said solenoid means being only operable in response to the connection of all of the seat belt sections of all of the occupied seats for releasing said locking means when the seat belt sections of all of the occupied seats are connected, whereby said control means may be shifted from an engine

starting position to a drive position; the improvement comprising:

means controllable by the driver of said vehicle for energizing said first solenoid means and for operating means limiting the movement of the control means so as to permit the movement of said control means only between said engine starting position, reverse gear and lowest forward gear, even though any of said seat belt means may be open at any occupied seat.

4,197,920

UNDERWATER ACOUSTIC REFLECTORS

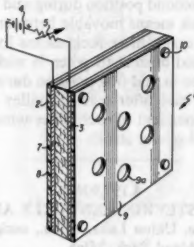
Philippe H. Cluzel; Michel G. Quivy, both of Six-Fours-les-Plages, and Bernard Tocquet, Sanary sur Mer, all of France, assignors to Etat Francais represented by the Delegue General pour l'Armement, Paris, France

Filed Mar. 16, 1979, Ser. No. 21,318

Claims priority, application France, Mar. 23, 1978, 78 08430

Int. Cl.² G10K *11/00*

U.S. Cl. 181—175 **13 Claims**



1. A process for constructing an underwater acoustic reflector comprising: immersing two opposed electrodes in an aqueous electrolyte solution, at least one of said electrodes being a plate formed of a material which retains gas bubbles, supplying an electrical voltage to said electrodes whereby a current passes through said electrolyte, regulating the intensity of said current in accordance with the depth of immersion of said electrodes, whereby said one electrode becomes covered with an appreciable and continuous layer of fine bubbles of gas forming a reflective surface.

4,197,921

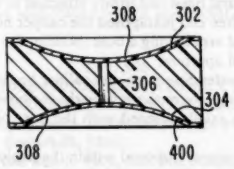
ANTI-REFLECTIVE ACOUSTIC WAVEFRONT REFRACTION ELEMENT

Gerard A. Alphonse, Princeton, and William C. Saunders, Jr., Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 6, 1978, Ser. No. 894,012

Int. Cl.² G10K *11/00, 11/06;* G01S *3/80*

U.S. Cl. 181—176 **13 Claims**



1. An anti-reflective acoustic wavefront refraction element having predetermined refractive properties when immersed in a medium for propagating an ultrasonic wave of a given wavelength, said medium having an acoustic impedance in the order of 1.5×10^6 kg/m² sec, said element itself comprising:

(a) a plastic body composed of a first material having a first certain acoustic impedance in the range of 2.2 to 3.5×10^6 kg/m² sec, said plastic body having a given size and shape that determines said refractive properties of said element,

(b) a plastic layer composed of a second material having a second certain acoustic impedance which is in a range of 0.5 to 1.5 of the geometric mean of that of said body, and said medium, said layer having a certain acoustic thickness in the range of $\frac{1}{4}$–$\frac{3}{4}$ of said given wavelength, said second material being a polyalkene exhibiting a surface tension, in the range of 25–45 dynes/cm, which is less than that exhibited by said first material, and

(c) a cement exhibiting a substantially smaller surface tension than that of said polyalkene to effect the wetting thereof, which cement cements said layer to the entire area of a surface of said plastic body.

4,197,922

AIR INTAKE PIPE FOR AN INTERNAL COMBUSTION ENGINE

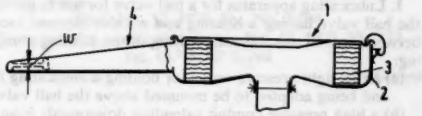
Otto Weber; Volkmar Keck, and Rolf Engelking, all of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Feb. 27, 1978, Ser. No. 881,547

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714100

Int. Cl.² F01N *1/06*

U.S. Cl. 181—229 **5 Claims**



1. An air filter housing assembly for an internal combustion engine comprising an air filter housing and an air intake pipe mounted on said filter housing including first and second airflow channels having different lengths each of said channels including a continuous opening extending longitudinally substantially along the entire length of each channel, and a duct interconnecting the openings in the channels throughout substantially their entire length, whereby said duct suppresses engine intake noise.

4,197,923

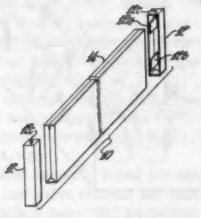
ACOUSTICAL CEILING BAFFLE

David A. Harris, Sylvania, and James E. Jones, Toledo, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 27, 1978, Ser. No. 963,702

Int. Cl.² E04B *5/52*

U.S. Cl. 181—287 **4 Claims**



1. An acoustical ceiling baffle comprising an elongate fabricated fibrous board longitudinally grooved on one side with a pair of grooves, faced with a decorative facing material on the other side, and folded at the grooves to provide a double

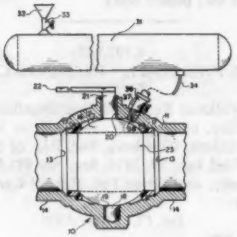
thickness of the board with the facing material on the outside, and a pair of end caps respectively enclosing opposite end portions of the folded board and each having provision on an upper wall portion thereof for suspending the baffle.

4,197,924

BALL VALVE LUBRICATING APPARATUS

Edward C. Suchy, Box 6007, Airport Rd., Fort St. John, British Columbia, Canada (V1J 4H6)

Filed Jun. 27, 1978, Ser. No. 919,670
Int. Cl.[2] F16N 7/02
U.S. Cl. 184—65 **2 Claims**



1. Lubricating apparatus for a ball valve for use in gas lines, the ball valve having a housing and a valve element located between spaced annular seals seating in the housing comprising:

(a) an air tight pressure vessel for holding a lubricating fluid and being adapted to be mounted above the ball valve,

(b) a high pressure conduit extending downwards from the bottom of the pressure vessel,

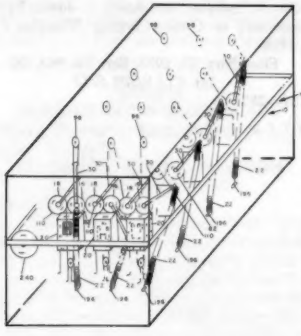
(c) a fitting ported into the ball valve housing between the annular seals for connecting the conduit to the housing to enable the flow of fluid by gravity from the pressure vessel into the housing and flow of pressurized gas into the pressure vessel.

4,197,925

MECHANICAL ENERGY DEVICE

Seyed M. H. Valeh, Shahrookh St. #64, Tehran, Iran

Filed May 3, 1977, Ser. No. 793,289
Int. Cl.[2] F03G 1/00
U.S. Cl. 185—9 **9 Claims**



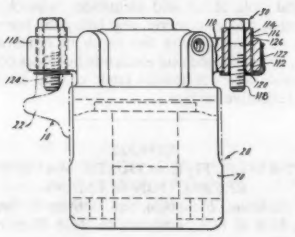
1. A mechanical energy device comprising a plurality of energy modules mounted on a frame, said plurality of energy modules operatively interconnected to each other to cooperatively generate a mechanical energy output in response to a mechanical energy input, each said energy module comprising a central shaft assembly and power assembly operatively interconnected to generate a power stroke, a crank lifter assembly to generate a recovery stroke and a drive assembly coupled to said crank lifter assembly to generate the mechanical energy output during said power stroke; said central shaft assembly comprising a central shaft rotatably mounted on said frame, a crank attached to said central shaft and a central gear and central lock means mounted on said central shaft, said crank lifter assembly comprising a main shaft disposed substantially parallel to said central shaft, a first interconnecting element, a pulley means including a lifter take-up pulley rotatably mounted on said main shaft and a crank lifter lock means, said power assembly coupled between said crank and said frame to control the movement of said crank during said power stroke, and said drive assembly operatively coupled to said crank lifter assembly to couple said mechanical energy device to external machinery to power the external machinery, said central lock means movable between a first and second position, said central lock means locking said crank and said central gear to said central shaft to rotate as a unit when in said first position during said power stroke and unlock said crank and said central gear from said central shaft to rotate independent of each other when in said second position during said recovery stroke, said crank lifter lock means movable between a first and second position, said crank lifter lock means locking said lifter take-up pulley to said main shaft when in said first position to rotate as a unit when in said first position during said recovery stroke and unlock said lifter take-up pulley from said main shaft to rotate independent of each other when in said second position during said power stroke.

4,197,926

BRAKE AND STEERING KNUCKLE APPARATUS

Ralph A. Youngdale, Union Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 27, 1978, Ser. No. 964,001
Int. Cl.[2] F16D 65/02
U.S. Cl. 188—18 A **1 Claim**



1. A mounting system for a caliper brake housing to be attached to a vehicle comprising:

a plurality of arms mounted within said vehicle, said arms having a first fixed end firmly attached to said vehicle and a second free end juxtaposed the caliper housing, said free end of said arm having a boss thereon, the boss containing a threaded aperture;

projections extending from said caliper housing, said projections having a bore therethrough, the bore in said projection being axially aligned with the bore of a complementary arm,

a polymeric sleeve disposed within the projection bore, said sleeve having a first internal diameter located at the end of the polymeric sleeve nearest the boss and a second diameter larger than the first diameter through the remainder of the polymeric sleeve;

a stud having a threaded portion with an external diameter smaller than the first diameter of said polymeric sleeve and adapted to engage the threaded bore in said boss, a second enlarged smooth shaft section having a diameter

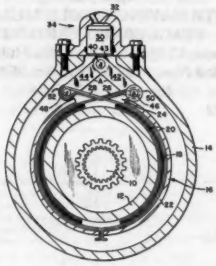
with an interference fit with the first diameter section of said sleeve and forming a shoulder with said threaded section the shoulder being drawn into engagement with said boss when said threaded portion is tightened in said threaded bore, a third raised portion on the stud near the end of the stud distal the boss, said third raised portion forming an interference fit with said second larger diameter portion of said polymeric sleeve, said stud providing an axial slide means for said caliper housing with substantially no circumferential or radial displacement.

4,197,927

BAND BRAKE AND ACTUATOR THEREFOR

Donald D. Johannesen; Orla Lee Holcomb, Jr., and Andrew F. Kazmierzak, all of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 3, 1978, Ser. No. 892,540
Int. Cl.[2] F16D *49/12*
U.S. Cl. 188—77 R **1 Claim**



1. In a band brake, the combination of, a housing, a rotatable member disposed within said housing, a band substantially surrounding said rotatable member and being engageable with said rotatable member to retard rotation thereof, a casing substantially enclosing said band and defining an opening for receiving overlapping ends of said band, said housing cooperating with a pressure responsive member to substantially form a hydraulic actuator, and a pair of links connecting said hydraulic actuator with said ends, said hydraulic actuator being movable toward said rotatable member to contract said band into engagement with said rotatable member via said pair of links, said pair of links terminating in rollers which are engageable with said casing and movable relative to said casing in response to movement of said hydraulic actuator toward said rotatable member, each link of said pair of links extending from a common connection with said hydraulic actuator to one of said rollers, said pair of links also terminating in pins remote from said hydraulic actuator which support said rollers and also connect said pair of links with said ends of said band, and said casing forming a radial clearance with said housing to movably receive said rollers within said radial clearance.

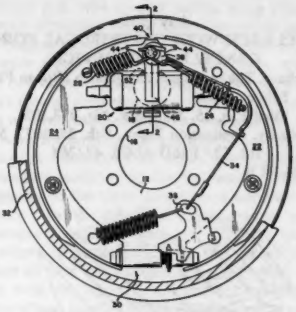
4,197,928

BRAKE SHOE GUIDE AND WHEEL CYLINDER RETAINER FOR A DRUM BRAKE

Michael A. Kluger, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 5, 1978, Ser. No. 922,129
Int. Cl.[2] F16D *71/00*
U.S. Cl. 188—206 A **7 Claims**

1. In a drum brake assembly having a pair of brake shoes which are movable by a hydraulic actuator to a braking position and a backing plate supporting the hydraulic actuator and including an anchor pin abutting the pair of brake shoes, the improvement wherein a clip cooperates with the anchor pin to limit separation between the pair of brake shoes and the backing plate and said clip also cooperates with the hydraulic



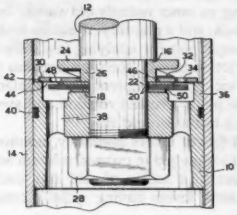
actuator to retain the latter in engagement with the backing plate.

4,197,929

DEVICE FOR PRODUCING DAMPING FORCE IN HYDRAULIC SHOCK ABSORBERS

Kiyonori Imai, Gifu, Japan, assignor to Kayaba Kogyo K.K., Tokyo, Japan

Filed Jan. 12, 1979, Ser. No. 3,008
Claims priority, application Japan, Jan. 13, 1978, 53-2413
Int. Cl.[2] F16F *9/348*
U.S. Cl. 188—320 **4 Claims**



1. A piston valve device for generating the damping force in a hydraulic shock absorber comprising in combination

(a) an outer member filled with the working oil,

(b) an inner member telescopically fitted into said outer member,

(c) a piston securely mounted on said inner member,

(d) a valve stop securely mounted on said inner member (above said piston),

(e) a non-return valve element which is axially slidably fitted over said valve stop and is formed with a plurality of (equiangularly spaced) holes, said non-return valve element being opened during the compression stroke (of said hydraulic shock absorber), thereby permitting the free flow of said working oil,

(f) a leaf valve element securely fitted (on said inner member) between said piston and said valve stop and radially outwardly extended beyond said holes of said non-return valve element, and

(g) a support shim securely fitted (on said inner member) between said leaf valve element and said non-return valve element in such a way that an orifice passage may be defined between said leaf valve element and said non-return valve element,

the outer diameter of said support shim being such that the outer periphery thereof may be located in contact with or in slightly radially inwardly spaced relation with the inner circle

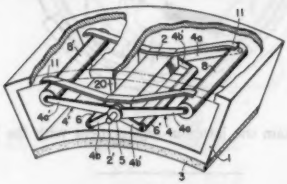
of the annulus containing said holes of said non-return valve element.

4,197,930

AIR CLUTCH WITH CENTRIFUGAL FORCE CANCELLATION DEVICE

Eisuke Sugahara, Tokyo, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1978, Ser. No. 878,102
Claims priority, application Japan, Feb. 25, 1977, 52-19254
Int. Cl.[2] F16D *43/28, 43/284*
U.S. Cl. 192—88 B **2 Claims**



1. In an air clutch of the type having a rotatable drum positioned within a rotatable rim; an air bellows attached to the interior surface of said rim and expandable with the supply of compressed air to urge a plurality of friction blocks into contact with the exterior surface of said drums so as to cause said rim and drum to rotate as a unitary structure, each of said friction blocks being individually supported for radial movement by respective torque pins attached to said rim by means of restoring springs, and each of said friction blocks having a floor comprising an inner radially outwardly facing surface of said friction block; and a plurality of inertia means mounted on each of said torque pins for applying inwardly directed radial force to said friction blocks, the inertia means comprising:

(a) first and second levers pivotably mounted at one end of said torque pin in crossed relation and symmetrical with respect to a radius of said rim;

(b) third and fourth levers pivotably mounted at the other end of said torque pin in crossed relation and symmetrical with respect to a radius of said rim, each of said first through fourth levers having radially outer and radially inner ends;

(c) a first inertia weight connected between the radial outer ends of said first and third levers;

(d) a second inertia weight connected between the radial outer ends of said second and fourth levers;

(e) a first contact member connected between the radial inner ends of said first and third levers; and

(f) a second contact member connected between the radial inner ends of said second and fourth levers, said contact members being in abutment with the floor of said friction block whereby centrifugal force exerted on each of said inertia weights will result in the application of an inwardly directed radial force through said contact members to said friction block, which inwardly directed radial force is substantially equal and opposite to the centrifugal forces acting on said friction block due to the rotation of said rim.

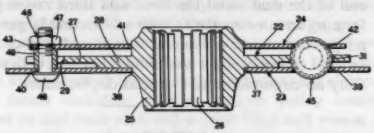
4,197,931

CLUTCH FRICTION PLATE AND DAMPER SPRING CONSTRUCTION

John A. Norcia, 2906 Sussex St., Canton, Stark County, Ohio 44718

Filed Jul. 26, 1977, Ser. No. 819,129
Int. Cl.[2] F16D *3/14, 3/64*
U.S. Cl. 192—106.2 **16 Claims**

1. In a clutch friction plate construction of the type having a hub member and a relatively rotationally movable drive plate having friction elements thereon, and a plurality of resilient elements cooperating with said hub member and drive plate for rotationally coupling together said hub member and drive plate; the resilient elements each including a compression spring having a plurality of coils forming a generally open



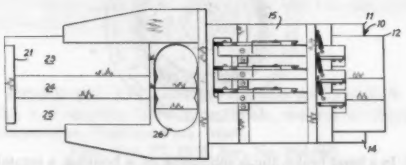
interior, with certain of the coils being spaced from each other; and an elastomer encapsulating the spring and completely filling the open interior and the spaces between said certain coils to increase the compression resistance of the resilient elements.

4,197,932

COIN CHUTE HAVING SINGLE MULTIPLE COIN STAGGERED APERTURE

Leonard Mercurio, 17 Quintree La., Dix Hills, N.Y. 11746

Filed Nov. 9, 1978, Ser. No. 959,339
Int. Cl.[2] G07F *5/04*
U.S. Cl. 194—92 **2 Claims**



1. An improved coin chute construction for use with coin operated devices for initiating the operation thereof, comprising: a first relatively fixed element and a movable coin chute element mounted for reciprocating movement thereon; said fixed element including means defining at least three parallel channels disposed in mutually staggered relation, said slide element including an elongated main body member defining upper and lower surfaces corresponding to the staggered channels defined by said fixed element, and having a transverse recess therein, wherein a plurality of coins corresponding to the number of parallel channels may be positioned in mutually staggered overlapping relation to rest upon a corresponding upwardly facing surface of said fixed element; and a corresponding plurality of sensing elements, one for each of said staggered channels disposed in mutually parallel relation to detect the passage of a coin in a respective channel, and inhibit sliding motion of said slide element in the absence of a proper coin in each channel.

4,197,933

LINEAR INDUCTION DRIVE SYSTEM FOR ACCELERATING AND DECELERATING MOVING WALKWAY

Phillip E. Dunstan, and Charles H. McConnell, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

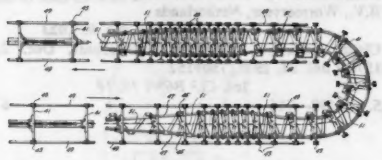
Filed Dec. 5, 1977, Ser. No. 857,433
Int. Cl.[2] B65G *17/00*
U.S. Cl. 198—334 **28 Claims**

1. A linear induction drive system for a moving walkway formed of a plurality of platforms movable in a planar path of travel comprising:

(a) a plurality of stationary linear induction motor stators located on one side of said plurality of platforms, along said path of travel; and,

(b) a reaction rail comprising:

(1) a plurality of elongate flat links rotatably attached to said platforms so as to pass over said stationary linear induction motor stators and through the magnetic field produced by said stationary linear induction motor stators, said plurality of elongate flat links lying in a plane parallel to the plane of movement of said platforms, each of said reaction rail links comprising a



plurality of laminations, said plurality of laminations including an electrically conducting non-magnetic lamination and a magnetic lamination; and,

(2) hinge means for rotatably connecting adjacent links together, the axis of rotation of said rotatable attachment of said links to said platforms and the axis of rotation of said hinge means being oriented such that said links fold in said plane parallel to the plane of movement of said platforms.

4,197,934

BELT CONVEYOR TRANSPORTATION SYSTEM UTILIZING MAGNETIC ATTRACTION

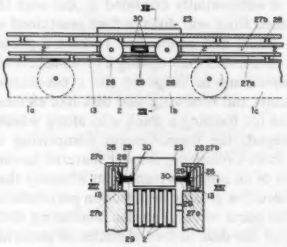
Kazumi Matsui, Yokohama; Takashi Takasue, Kawaguchi, and Masami Iwasaki, Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1977, Ser. No. 791,141

Claims priority, application Japan, Apr. 28, 1976, 51-47880; May 25, 1976, 51-59590; Jun. 15, 1976, 51-69276; Jul. 6, 1976, 51-79426; Aug. 25, 1976, 51-100647; Sep. 30, 1976, 51-116509; Oct. 6, 1976, 51-119313; Oct. 12, 1976, 51-121341; Nov. 10, 1976, 51-134185; Jan. 11, 1977, 52-1133

Int. Cl.[2] B65G *17/00*; B61B *13/12*

U.S. Cl. 198—472 **11 Claims**



1. A belt conveyor type transportation system by magnetic attraction comprising at least one conveyor line including a plurality of conveyor units arranged successively, each of said conveyor units comprising endless belt means including a magnetic material as a constitutent element encircled around on a pair of a driving wheel and idle wheel to be driven thereabout at a respective speed independent of the speeds of the other units, and at least one moving body disposed on said conveyor line, said moving body including magnet means for magnetically attracting said magnetic belts, whereby said moving body is moved forcibly along said conveyor line by following the circulating speed of the magnetic belt means of each of said conveyor units, said magnet means being constantly energized to produce magnetic attraction strong enough to overcome the friction force due to the load added to the magnet belt means by the magnet means, said magnet means being attracted by magnetic force towards the surface of the magnet belt means and being in facing relation therewith at less than a predetermined gap, said magnet means being constructed so that magnetic attraction between two conveyor units is made when the magnet means passes through a portion between the two conveyor units, the ratio of the magnetic attraction between the two units varying gradually with the movement of the magnet means, such that when the velocities of the magnetic belts of both units are different, the velocity of the moving body is varied linearly and gradually from the velocity of one unit to the velocity of the other unit accompanied with slip, said magnet means being divided into a plurality of parts at equal spacing in the travel direction of said moving body in such a manner that the pole faces of said magnet means which face the magnetic belt means of said conveyor line are bendable as a whole to conform with the bending of the magnetic belt surface of said conveyor line, said divided parts being connected with one another by flexible joint means, said divided parts of said magnet means being mounted on said moving body by another flexible joint means,

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4,197,935

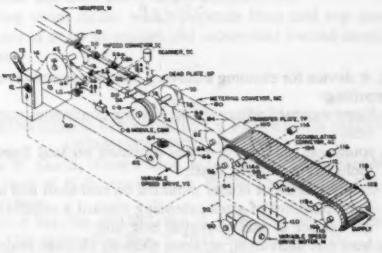
AUTOMATIC FEEDING OF SPACED ARTICLES TO A PROCESSING MACHINE

John S. Aterianus, and Donald C. Crawford, both of Green Bay, Wis., assignors to FMC Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 693,611, Jun. 7, 1976, abandoned. This application Dec. 27, 1977, Ser. No. 865,061

Int. Cl.[2] B65G *43/08, 47/31*

U.S. Cl. 198—460 **14 Claims**



1. A feeder for an article processing machine of the type wherein said processing machine comprising article receiving means, means for cyclically processing articles received from said article receiving means and a continuous drive mechanism for said processing machine; said feeder comprising infeed conveyor means having longitudinally spaced article pushing dogs for feeding articles in spaced relation to said processing machine, means for driving said infeed conveyor means in synchronism with the drive mechanism of said processing machine, metering conveyor means for advancing leading articles of a row of normally abutting articles to said infeed conveyor means, and intermittent drive means for driving said metering conveyor means in synchronism with but at a slower speed than that of infeed conveyor drive means, said intermittent drive means comprising control means for starting and stopping said metering conveyor means, said control means comprising switch means cyclically operated in synchronism with the dogs on said infeed conveyor means to a cyclically occurring drive condition that provides a drive signal to said intermittent drive means for causing said metering conveyor means to advance leading articles of said row toward said infeed conveyor means, said control means also including scanner means for sensing an edge of a leading article advanced by said metering conveyor means for providing a stop signal to said intermittent drive means, said metering conveyor means; the improvement wherein the path of articles along said processing machine article receiving means is a longitudinal

continuation of the path of travel of said infeed conveyor means, deadplate means between said metering and said infeed conveyor means for receiving articles pushed thereon by said metering conveyor means, said deadplate means supporting articles thereon until they are pushed off by the advance of upstream articles by said metering conveyor means, said intermittent drive means for said metering conveyor means including a variable speed ratio drive driven by said continuous processing machine drive mechanism and adjustable for driving said metering conveyor means at a speed which cause articles on said metering conveyor means to advance at a predetermined rate across said deadplate means at a selected speed relative to the spacing and speed of the dogs on said infeed conveyor means.

4,197,936

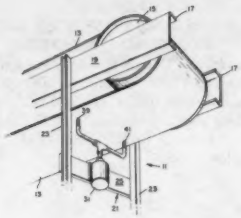
CONTINUOUS CONVEYOR BELT CLEANER

Cleon R. Fowler, 213 Stevenson Rd., Winterhaven, Fla. 33880

Filed Feb. 9, 1978, Ser. No. 876,218

Int. Cl.[2] B65G *45/00*

U.S. Cl. 198—498 **12 Claims**



1. A device for cleaning a moving continuous conveyor belt, comprising:

a frame mounted adjacent said moving continuous conveyor belt;

a rotational movement means mounted on said frame and including a rotating shaft;

a cleaning element holder mounted on said shaft and including a plurality of arms extending toward a relatively planar surface of said conveyor belt; and

at least one individual, separate cleaning element removably mounted on the extremity of each of said arms, wherein said cleaning elements are rotated by said rotational movement means in contact with said planar surface to define an overlapping spiral path thereon.

4,197,937

NON-IONIC EMULSIFYING RELEASE AGENT FOR BITUMINOUS SANDS CONVEYOR BELT

Emerson Sanford, Edmonton, and Robert Shaw, Leduc, both of Canada, assignors to Petro-Canada Exploration Inc., Calgary; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity, Edmonton; Ontario Energy Corporation; Imperial Oil Limited, both of Toronto; Canada-Cities Service, Ltd., Calgary and Gulf Oil Canada Limited, Toronto, all of, Canada

Filed Nov. 1, 1977, Ser. No. 847,596

Int. Cl.[2] B65G *45/02*

U.S. Cl. 198—500 **2 Claims**

1. In the process wherein bituminous sands are deposited on and transported by an endless conveyor belt to its end, where the sands are unloaded as the belt rounds the end roller and are subsequently subjected to a hot water extraction process, the improvement comprising:

applying to the sands-bearing surface of the belt an aqueous solution, suspension or emulsion of alypoprylic, non-ionic emulsifying agent, prior to depositing the bituminous sands thereon, to provide a release agent which is operative to effect clean separation of the sands from the surface during the unloading operation without significant deleterious effect on the downstream extraction process.

4,197,938

CONVEYOR FOR BULK MATERIALS

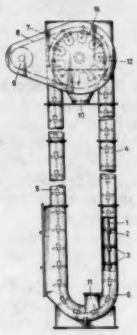
Willem P. Klinkenberg, Heiloo, Netherlands, assignor to Machinefabriek en Constructiewerkplaats Gebr. Klinkenberg B.V., Wormerveer, Netherlands

Filed Dec. 2, 1975, Ser. No. 637,023

Claims priority, application Netherlands, Dec. 3, 1974, 7415762; Jul. 31, 1975, 7509152

Int. Cl.[2] B65G *19/14*

U.S. Cl. 198—716 **6 Claims**



1. In a conveyor for bulk materials comprising an endless cable, a plurality of disk-like elements fixed at equal spacings to said cable by means of respective clamping elements, a sprocket type drive wheel for driving said cable and said disk-like elements, said sprocket type drive wheel being formed with a plurality of circumferentially spaced recesses adapted to receive said disks and intermediate bearing surfaces, said bearing surfaces having a radius of curvature that is less than the radius of said sprocket type drive wheel whereby the bending of said cable is substantially confined to the area thereof between and spaced from said disks, a duct positioned at one side of said drive wheel and adapted to receive a portion of the length of said cable, said duct having a cross-sectional configuration complementary in shape to the cross-section of said disk-like elements and receiving said disk-like elements with a slight clearance for forming a track way along which material may be conveyed, the improvement comprising said disks being formed from a relatively flexible material having a cross-sectional shape of an isosceles trapezium whereby the modulus of elasticity thereof is greater in direction perpendicular to the disk than in the plane of the disk for facilitating deflection of the periphery of the disk to free particles of material trapped between the periphery of the disk and said duct.

4,197,939

SHIPPING AND DISPLAYING DEVICE FOR SMALL ARTICLES

Amilcare Dogliotti, Alba, Italy, assignor to P. Ferrero & C. S.p.A., Alba, Italy

Filed Jan. 4, 1979, Ser. No. 947

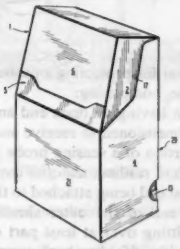
Int. Cl.[2] B65D *5/50, 5/52*

U.S. Cl. 206—44 R **13 Claims**

1. A device for shipping and displaying articles, said device comprising:

a frame havng front, rear, bottom and side walls connected to each other, said front and side walls having bottom edges lying in the same plane of said bottom wall, said front and rear walls having top edges on the side thereof

which is opposite to said bottom wall, the top edge of said front wall lying below the top edge of said rear wall, said frame including a substantially horizontal shelf, supported by said front and rear walls, which is disposed substantially at the same level as the top edge of said front wall, said shelf and said front, bottom and side walls defining an enclosure, said rear wall having a bottom edge spaced from said bottom wall so as to define an opening affording access to said enclosure,



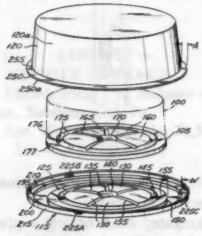
two identical trays, one of said trays being disposed on said shelf for diplaying articles upon it and the other tray being stored within said enclosure for subsequent use, each of said trays beng adapted to fit both on said shelf and within said enclosure, whereby the tray stored within said enclosure can be exchanged for the tray disposed on said shelf when the latter is empty.

4,197,940

CIRCULAR CAKE TRAY AND COVER

Fred M. DeRossett, Huntington Beach, Calif., assignor to Sunrich Mercantile Corp., LaHabra, Calif.

Filed Apr. 16, 1979, Ser. No. 30,024
Int. Cl.[2] B65D *25/02, 85/36*
U.S. Cl. 206—45.32 **13 Claims**



1. A pastry container comprising a tray and a cover holding a pastry mounted on a pastry plate:

the bottom surface of said plate resting on a plate supporting portion of the top surface of said tray;

said cover mounted on said tray over said plate and resting on a cover supporting portion of the top surface of said tray; and

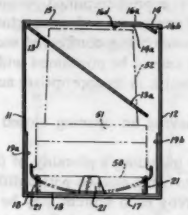
said tray and said plate each integrally formed to mutually comprise elevated and recessed portions in said surfaces, said matching portions congruently nested between said plate and said tray, elevated portions in said top surface of said tray nested in recessed portions in said bottom surface of said plate and depending portions in said bottom surface of said plate nested in recessed portions in said top surface of said tray, so that said plate is constrained from transversely sliding on said tray even when said tray is moderately inclined.

4,197,941

SANITARY KIT PACKAGE

Peter R. Halasz, Los Angeles, Calif., assignor to Bergen-Brunswig Corporation, Los Angeles, Calif.

Filed Sep. 1, 1978, Ser. No. 938,832
Int. Cl.[2] B65D *85/62, 77/26, 77/28*
U.S. Cl. 206—216 **14 Claims**



1. In combination,

first and second blanks which can be interconnected,

said first blank including a major panel with an aperture therein for receiving a first component,

said second blank including a first panel having slots for receiving said major panel of said first blank and a second component which covers said first component,

second and third panels joined to said first panel to form sides of said unit,

top panel means including locking means for joining said second and third panel means together, and

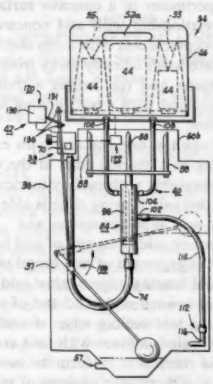
securing panel means which depends from said top panel means in order to engage and secure said second component.

4,197,942

CONTAINERIZED FLUID SUPPLY FOR FLUID MIXING AND DISPENSING SYSTEM

Leonard W. Gacki, White Plains, and Robert E. Daly, Farmingdale, both of N.Y., assignors to Picker Corporation, Cleveland, Ohio

Division of Ser. No. 609,957, Sep. 3, 1975, Pat. No. 4,103,358. This application Nov. 7, 1977, Ser. No. 849,524
Int. Cl.[2] B65D *25/08*
U.S. Cl. 206—219 **25 Claims**



1. A disposable containerized fluid supply for use with a mixer of photographic chemicals, comprising:

(a) a six-sided, folded corrugated carton;

(b) structure within the carton which together with the

carton defines a plurality of vessel-receiving compartments each of a different configuration;

(c) a plurality of fluid vessels, forming a set, each vessel containing a chemical for use in photographic film processing and each of a different configuration than other of the vessels;

(d) each such vessel being configured to fit in one of said compartments in a predetermined position, there being a like number of containers and compartments;

(e) the compartments being configured such that all of the vessels of a set cannot be positioned within the container unless each vessel is in its appropriate and intended compartment;

(f) each vessel having an opening closed by a pierceable septum; and

(g) the container including a plurality of fluid access apertures, each septa being aligned with a different one of said apertures whereby each septum may be pierced and the contents of that septum's vessel discharged without opening the carton.

4,197,943

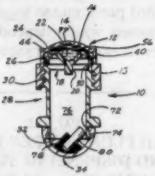
DENTAL ALLOY CONTAINER

Maurice M. Weikel, 1050 Greenfield Dr., El Cajon, Calif. 92021

Filed Aug. 14, 1978, Ser. No. 933,499

Int. Cl.[2] B65D *25/08*

U.S. Cl. 206—219 **6 Claims**



1. A dental alloy container comprising:

A receptacle having a blind end with a concave interior surface and internally threaded cylindrical walls extending longitudinally therefrom,

an insert having a central structure with a sealing edge defining the perimeter of a concave surface disposed in face-to-face relationship with said concave interior surface of said receptacle and with a rim displaced from said central structure longitudinally away from said blind end of said receptacle, said rim having a transverse bearing shoulder means, and with a web joining said rim to said central structure,

a tubular barrel open at one end and with external threads and terminating in a bearing edge at the other end, and threadably engageable with said cylindrical walls of said receptacle so that said bearing edge is able to act longitudinally against said shoulder means, and

cap means for sealing said open end of said barrel, whereby fully threaded engagement of said barrel with said receptacle forces said bearing edge against said insert bearing shoulder means toward said blind end of said receptacle, thereby pressing said sealing edge of said central insert structure into sealed contact with said concave interior surface of said receptacle to form an isolated, enclosed cavity between said concave surfaces of said blind end of said receptacle and said insert, and whereby release of said inner engaged threads allows said sealing edge of said central insert structure to draw away from said concave surface of said blind end of said receptacle to open said cavity.

4,197,944

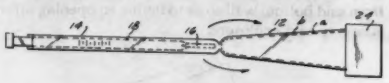
PROBE COVER

David G. Catlin, Wanaque, N.J., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Filed Sep. 18, 1978, Ser. No. 943,322

Int. Cl.[2] B65D *85/20*

U.S. Cl. 206—306 **21 Claims**



1. A probe cover for protecting a probe from contamination during patient use, comprising:

an inner sheath having an open end and a close distal end, and being dimensioned to receive and frictionally engage at least a portion of a sensing probe therein; and

an outer sheath of resilient material having an open end and a closed distal end being attached to the inner sheath at the close distal end of the outer sheath, said outer sheath capable of fitting over at least part of said inner sheath, and also capable of folding back upon itself so as to encapsulate the contaminated surface of the cover which has been exposed to the patient use.

4,197,945

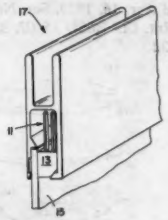
PIN PROTECTOR

Theodore R. Sherwood, Sunnyvale, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1976, Ser. No. 728,497

Int. Cl.[2] B65D *73/02*

U.S. Cl. 206—328 **4 Claims**



1. A circuit board assembly in combination with a circuit board pin protector comprising:

(a) a solid elongated head having a plurality of upwardly extending pins and an elongated circuit board connected to said head, said head having a beveled edge extending the length of said head and a plurality of solder pads extending outwardly along the length of said circuit board;

(b) a pin protector including first and second hollow elongated tubes having a common wall therebetween, said second tube having rigid walls and an open side and sharing said common wall with said first tube, said first tube having first and second spaced apart rigid walls and an opening that extends the length of said first tube, said first wall including a solder pad recess that extends the length of said first wall, and said second wall including an elongated locking member that depends from the lower edge of said second wall and towards said first wall; and

(c) said circuit board assembly being positioned within said first tube whereby said plurality of solder pads are positioned within said solder pad recess and said elongated locking member abuts said beveled edge.

4,197,946

DEVICE FOR PACKING LIQUID CRYSTAL CELLS

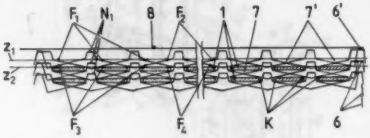
Armin Simmen, Schinznach-Dorf, Switzerland, assignor to BBC Brown Boveri & Company, Limited, Baden, Switzerland

Filed Oct. 17, 1978, Ser. No. 952,157

Claims priority, application Switzerland, Nov. 22, 1977, 14236/77

Int. Cl.² B65D 1/36, 85/62

U.S. Cl. 206—332 4 Claims



1. A device for packing rectangular liquid crystal cells, comprising:

at least two identical stackable plastic packs, each pack comprising,

first means for immobilizing said cells upon stacking said packs, said means comprising a plurality of depressions, each depression provided to receive one of said cells, each depression having at least two first opposite surfaces which are inclined from the top outside towards the bottom inside and which are provided in an upper region of said pack and having at least two second opposite surfaces which are inclined from the top inside towards the bottom outside and which are provided in a lower region of said pack, whereby said first and second surfaces are arranged in such a manner that the edges of said cells are clamped between said second surfaces of an upper pack and said first surfaces of a lower pack,

second means for preventing displacement of said cells upon shaking movements of the device after removal of said upper pack, and

third means for facilitating removal of said cells from a lower pack after separation of said upper pack therefrom.

4,197,947

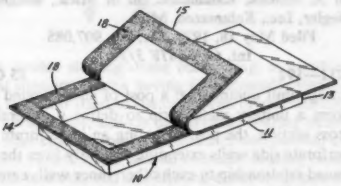
STERILE PACKAGE

Syed M. H. Zaidi, Philadelphia, Pa., assignor to Paper Manufacturers Company, Southampton, Pa.

Filed Apr. 19, 1979, Ser. No. 31,504

Int. Cl.² B65D 85/54

U.S. Cl. 206—438 5 Claims



1. A package for containing a sterilized article comprising a container made of front and rear panels of nonporous, transparent plastic material, said panels being joined together about their peripheral edges by means of a transparent seal to define a recess for holding a sterilized article, said seal between said panels being provided by an adhesive which upon application to one or both of said panels is opaque, but transparent to provide such transparent seal, said adhesive forming said seal becoming opaque in those areas of said front and rear panels where said seal has been ruptured.

4,197,948

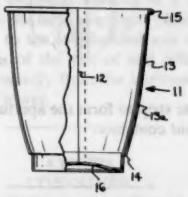
NESTABLE FOAM CUP

Stephen W. Amberg, Toledo, Ohio, and Thomas E. Doherty, Setauket, N.Y., assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 479,421, Jun. 14, 1974, Pat. No. 3,970,492, which is a continuation-in-part of Ser. No. 354,305, Apr. 25, 1973, abandoned, which is a continuation-in-part of Ser. No. 211,259, Dec. 23, 1971, Pat. No. 3,854,583. This application May 6, 1976, Ser. No. 683,746

Int. Cl.² B65D 21/02

U.S. Cl. 206—520 10 Claims



1. A nestable cup-like container comprising, in combination: a unitary sidewall formed from a double-ended sheet of an expanded heat-shrinkable thermoplastic material, and having an inner surface adapted to contact a liquid product to be contained in said container, the ends of said sheet being joined to one another to form a liquid-tight seam extending from the top to the bottom of said container, said ends are of reduced thickness and increased density, said container having a mouth at its top which is defined by the upper portion of the sidewall, the sidewall continuously and progressively tapering inwardly and downwardly from the said open mouth for a major portion of the height of said container, the thickness of the sidewall continuously and progressively increasing over the said major portion from a lesser thickness at the top thereof to a greater thickness at the bottom thereof, as a result of heat shrinking said sheet the density of the sidewall continuously and progressively decreasing over the said major portion from a greater density at the top thereof to a lesser density at the bottom thereof; and a piece which is separate from said unitary sidewall and which is sealingly fused to an overlapping, laterally extending, inwardly folded, lowermost integral portion of the double-ended sheet from which the sidewall is formed, thereby closing the bottom of the container in a liquid-tight manner.

4,197,949

OPENING OF CONTAINERS

Lars C. Carlsson, Blentarp, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Aug. 28, 1978, Ser. No. 937,172

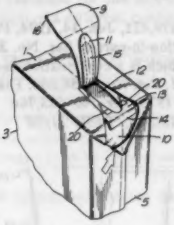
Claims priority, application United Kingdom, Sep. 1, 1977, 36642/77

Int. Cl.² B65D 5/54, 5/72

U.S. Cl. 206—611 7 Claims

1. A container having first and second adjacent walls, said first wall including an opening arrangement comprising a line of perforations defining a tear strip which may be lifted to provide an opening in said first wall, a masking seal sheet attached to the inside of said first wall fully covering said opening, said sheet being bonded to the inside of a smaller area of the tear strip to tear an aperture corresponding to said area upon lifting said tear strip, said first and second walls cooperating to form a lug which lies adjacent said second wall and is connected to said first wall by a first fold line and to said second wall by a second fold line and is further defined by additional intersecting fold lines, said tear strip extending across said first fold line, said lug, and one of said intersecting fold lines, the portion of said tear strip which extends across said one intersecting fold line being bounded by a continuous cut extending from said one intersecting fold line in a loop to

form a projection which extends outwardly from said one intersecting fold line, whereby said projection assists in the



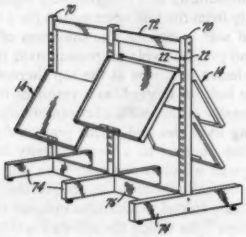
lifting of said tear strip to form the aperture for removing the contents from said container.

4,197,950

DISPLAY SHELF ASSEMBLY

Ernest G. Ovitz, III, Galva, Ill., assignor to John H. Best and Sons, Inc., Galva, Ill.

Filed Jul. 13, 1978, Ser. No. 923,948
Int. Cl.[2] A47F 7/16
U.S. Cl. 211—134 **3 Claims**



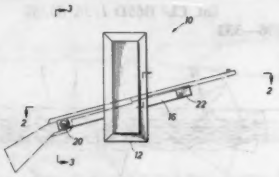
1. A carpet display shelf assembly comprising, at least three elongated support bars supported in a parallel upright relation, said bars each being provided with a double row of selectable bracket support slots, a pair of laterally spaced elongated side arm members of stamped metal each presenting a side plate having an attaching bracket at one end with at least a pair of hooks formed thereon to slidably fit into a corresponding pair of slots in adjacent support bars, a front lip member of stamped metal joined at the ends thereof to the ends of said side plates opposite the brackets thereby to afford a three-sided enclsoure, said pair of hooks on each side plate bracket being aligned on an axis which when extended in the direction of said bars intercepts the likewise extended axis of the related side plate at an acute included angle, said plates and lip each having a shelf supporting flange bent inwardly therefrom along a fold line at the lower edge thereof and which collectively afford a three-sided support frame for a flat shelf inside the enclosure, said suport frame being located beneath the upper edges of the side plates and front lip so that a carpet sample will be walled in by the enclosure defined by said side plates and front lips, and a flat piece of shelving supported by said support frame to constitute the shelf, said double rows of support slots enabling at least two of said three-sided support frames and related shelving to be hook-supported in laterally adjacent relation by the three support bars.

4,197,951

MOUNTING RACK FOR GUNS AND THE LIKE

Fred A. Shassere, P.O. Box 35865, Houston, Tex. 77096

Filed Jan. 19, 1978, Ser. No. 870,664
Int. Cl.[2] A47F 7/00; A47B 81/00
U.S. Cl. 211—64 **5 Claims**



1. Apparatus for mounting a rifle or shotgun decoratively on a wall, comprising:

(a) a generally vertical plaque;

(b) an elongate arm adapted to be positioned behind the front of said plaque and having two ends, each end comprising a protruding weapon supporting means for upholding a weapon placed thereon;

(c) means for securing said arm to said plaque at an angle determined by said means and which means comprises:

(1) a transverse groove means behind the exposed front of said plaque;

(2) said arm being constructed and arranged to fit in said groove means and extend beyond the edges of said plaque at both ends thereof;

(3) wherein said arm positions said support means sufficiently forward of said plaque to enable a weapon to be positioned in front of said plaque;

(4) a second groove means on said plaque which intersects said first groove means, said second groove means having an undercut therealong to enable a locking means having a profile matching said undercut to enable said locking means to be inserted thereinto to affix said plaque to a wall by nailing or otherwise fastening said locking means to a wall; and

(5) wherein said locking means comprises an elongate member sheathed in said second groove means on assembly of said arm, said plaque and said locking means.

4,197,952

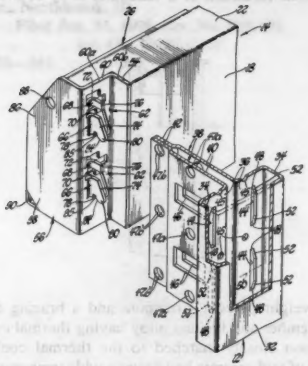
STORAGE UNIT AND POST AND BEAM OF THE UNIT

Eugene A. De Fouw, Portage; Thomas A. Klein, Plainwell, and William A. Rhodes, Kalamazoo, all of Mich., assignors to Lear Siegler, Inc., Kalamazoo, Mich.

Filed May 18, 1978, Ser. No. 907,085
Int. Cl.[2] A47F 5/10
U.S. Cl. 211—191 **13 Claims**

1. A storage unit comprising: a post of an elongated shape formed from a unitary metal strip to define a generally T-shaped cross section, the post including an imperforate outer wall, imperforate side walls extending inwardly from the outer wall in spaced relationship to each other, inner walls extending from the side walls toward each other in spaced relationship to the outer wall, each inner wall having a series of mounting openings along the length of the post for use in mounting beams, each mounting opening including an inclined surface, and flanges which extend inwardly from the inner walls and which are connected to each other to reinforce the post; and a beam of an elongated shape having at least one end including a notch therein, an attachment tab mounted on said end of the beam within the notch thereof so as to be protected when the beam is not secured to the post and so as to secure the beam to one of the mounting openings in one of the inner walls of the

post during use, and said beam attachment tab including a wedging surface that cooperates with the inclined surface of



the associated post opening to secure the beam end against the adjacent inner wall and flange of the post.

4,197,953

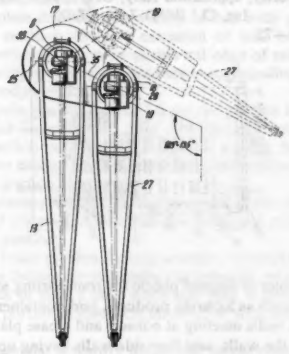
DOUBLE SLEWING CRANE CONSTRUCTION

Egon Frick, Lübeck, Fed. Rep. of Germany, assignor to Orenstein & Koppel AG, Fed. Rep. of Germany

Continuation of Ser. No. 513,118, Oct. 8, 1974, abandoned. This application Jul. 8, 1976, Ser. No. 703,596

Int. Cl.[2] B66C *23/00, 23/52, 5/02*

U.S. Cl. 212—47 **3 Claims**



1. A double slewing crane comprising, in combination, an upright support column having a substantially vertical central axis; a ring gear fixed to the upper end of said column concentric with said axis; anti-tilt anti-friction bearing means including at least one bearing race affixed to said column concentric with said axis, first and second rotatable bearing races concentric with said axis, and anti-friction elements disposed between said fixed and rotatable bearing races; a first crane, including a first crane control and operating tower affixed to said first rotatable bearing race; a second crane, including a second crane control and operating tower affixed to said second rotatable bearing race; a first jib mounted on said first tower for pivoting about a first horizontal axis on said first tower; a second jib mounted on said second tower for pivoting about a second horizontal axis on said second tower; first drive means on said first tower including a first pinion meshing with said ring gear; and a second drive means on said second tower including a second pinion meshing with said ring gear; whereby said first and second towers are rotatable about said vertical central axis of said upright support column, as a common axis of rotation; at least one of said towers being offset radially from said common axis; when the two jibs are parallel to each other the horizontal angle between the jib mounted on said offset tower and a horizontal line connecting the center of said offset tower and said common axis being substantially from 105° to 135°, the other one of said crane control and operating towers having a vertical center line coinciding with said common axis, the jib of said offset tower having a length less than the jib of said other tower by an amount such that, when the two jibs are rotated into substantial parallel relation with each other for conjoing handling of a heavy load, the outer ends of the two jibs lie in a common plane that is substantially perpendicular to the longitudinal axis of said jibs; the horizontal pivot axis of the jibs of said offset tower being spaced vertically upwardly from the horizontal pivot axis of the jib of said other tower.

4,197,954

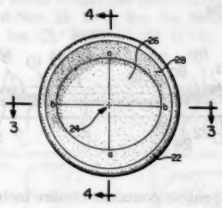
CONTAINER

Eugene W. Oltman, Gladstone, and Robert N. Hills, Raytown, both of Mo., assignors to Ethyl Development Corporation, Baton Rouge, La.

Filed Oct. 5, 1978, Ser. No. 948,772

Int. Cl.[2] B65D *23/00*

U.S. Cl. 215—1 C **6 Claims**



1. A thermoplastic container comprising:
   a. a hollow body;
   b. a hollow neck on one end of said body for dispensing the contents of said container; and
   c. a circular bottom wall closing off the other end of said body, said bottom wall comprising,
      i. an oval center portion, and
      ii. a circular, upwardly and inwardly extending connecting wall which is connected at its circumference to said other end of said hollow body and at its innermost extent to said oval center portion.

4,197,955

TAMPER-PROOF CLOSURE

Werner R. Luenser, Blue Island, Ill., assignor to Ethyl Products Company, Baton Rouge, La.

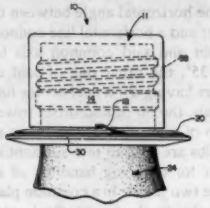
Filed Oct. 26, 1978, Ser. No. 954,975

Int. Cl.[2] B65D *41/34*

U.S. Cl. 215—252 **14 Claims**

1. A thermoplastic, tamper-proof cap for fitment to a thermoplastic container having a threaded neck and an outwardly projecting flange beneath the container thread, the cap comprising:
   a. a top wall;
   b. a downwardly extending sidewall, said sidewall having an inwardly projecting helical thread for cooperation with said container threads; and
   c. an annular cap flange disposed beneath said cap sidewall and adapted for connection to said container flange, said cap flange being connected to said cap by way of a plural-

ity of elongated connecting ribs, said ribs extending downward from said cap sidewall to said cap flange and having



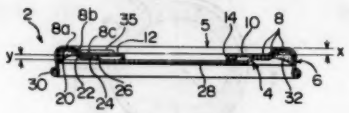
a direction of slope opposite the direction of the helix angle of said cap helical thread.

4,197,956

EASILY OPENABLE CONTAINER CLOSURE HAVING A SHELL AND A SEALING MEMBER

Kashiwa Murayama, Fujisawa, Japan, assignor to Japan Crown Cork Co., Ltd., Tokyo, Japan

Filed Mar. 1, 1979, Ser. No. 16,606
Claims priority, application Japan, Mar. 3, 1978, 53/23544; Apr. 5, 1978, 53/39278; Aug. 11, 1978, 53/97286
Int. Cl.[2] B65D *41/42*
U.S. Cl. 215—254 **10 Claims**



1. An easily openable container closure including (1) a shell of a unitary structure comprising a top and a cylindrical skirt, said top having an annular top surface portion leading to the upper end of the skirt and a pull ring leading to a part of the inner peripheral edge of the annular top surface portion through a linking piece, and said annular top surface portion and skirt having a pair of breaking weakened lines formed along the phantom lines extending from both side edges of said linking piece, and (2) a sealing member positioned within said shell and closing an opening present in the top surface of said shell; said annular top surface portion of the shell at least having a first annular portion extending inwardly from the upper end of the skirt and a second annular portion extending downwardly and inwardly in an inclined manner from the first annular portion, and said linking piece extending inwardly from a part of the inner peripheral edge of the annular top surface portion and the pull ring extending inwardly from the inside end of the linking piece being located at a lower level than the uppermost surface of the annular top surface portion.

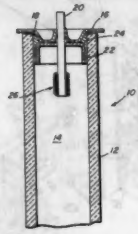
4,197,957

VACUUM TIGHT ASSEMBLY

Carl F. Buhrer, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 26, 1978, Ser. No. 973,333
Int. Cl.[2] H01J *61/30*; H01K *1/28*
U.S. Cl. 220—2.1 R **13 Claims**

1. A vacuum-tight assembly comprising a high density polycrystalline ceramic body having a cavity and means for sealing said cavity from the atmosphere, said ceramic body being substantially transparent to visible light, and consisting essentially of a compound having a perovskite structure having the formula: ABO_3, wherein A is selected from the group consisting of lanthanum, cerium, praseodymium, neodymium and mixtures thereof and B is selected from the group consisting of aluminum, scandium, lutecium, and mixtures thereof, said means for sealing comprising at least one closure member formed from vanadium or a vanadium alloy containing up to



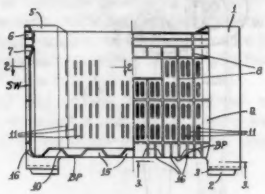
about 4 weight percent zirconium and a brazing alloy, said closure member and brazing alloy having thermal coefficients of expansion closely matched to the thermal coefficient of expansion of said ceramic body over a wide temperature range.

4,197,958

CONTAINER OF FOAMED THERMOPLASTIC MATERIAL

Antonio Zeni, Via Arlasa, 6, Tesero (Trento), Italy, and Rudi Steinlein, Almbachstrasse, 8, Munich, Fed. Rep. of Germany

Filed Oct. 3, 1978, Ser. No. 948,254
Claims priority, application Italy, Oct. 4, 1977, 22418/77[U]
Int. Cl.[2] B65D *7/42, 87/00*
U.S. Cl. 220—72 **5 Claims**



1. A container of foamed plastic for transporting and storing bulk goods, such as agrarian products, said container comprising four side walls meeting at corners and a base plate extending between the walls, said four side walls having upper edges defining an open top of the container, said container being characterized by:

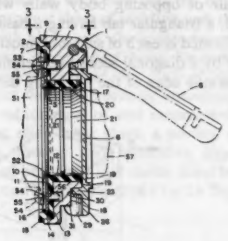
said container comprising a one-piece body of said plastic and four simple feet welded to the one-piece body, said one-piece body including said side walls, corners and base plate, each said side wall being a single thickness of said plastic with an external side on which there are strengthening ribs, said corners being generally "L" shaped in transverse cross-section and being double-walled comprising spaced inner and outer walls, each of said corner walls, as seen in transverse cross-section, consisting of two portions positioned in a generally "L" configuration and the two corner walls being spaced from each other a distance substantially less than the length of said portions and being joined by respective sections at each of the ends of the "L," the base plate having a plurality of corrugations extending diagonally thereacross, all of which corrugations are generally parallel to each other, each of said corrugations being trapezoidal in cross-section.

4,197,959

COVERS FOR ELECTRICAL RECEPTACLES

David E. Kramer, Northbrook, Ill., assignor to Daniel Woodhead, Inc., Northbrook, Ill.

Filed Jun. 14, 1978, Ser. No. 915,400
Int. Cl.[2] H02G 3/14
U.S. Cl. 220—242 4 Claims



1. A cover for an electrical receptacle comprising
a. a base
(1) having a rear face adapted to be abuttingly engaged with a supporting member, and
(2) including a resilient, substantially cylindrical-shaped body portion projecting axially, forwardly from said rear face,
b. said body portion having a rear end portion adapted to receive a front portion of such a receptacle therein,
c. said base having an opening therein in axial alignment with said body portion in position to permit insertion of said front portion of such a receptacle forwardly through said opening into said rear end portion of said body portion, and including
(1) a plate disposed rearwardly of said body portion, and
(2) a resilient, integral extension of said body portion enveloping the outer peripheral edge of said plate,
d. a housing mounted on said base in surrounding relation to said body portion,
e. said body portion having a front end portion for the insertion of an electrical plug therethrough into electrical connection with such a receptacle having the front end portion thereof so disposed in said rear end portion of said body portion,
f. said housing including a closure member movable into and out of covering relation to said front end portion of said body portion,
g. said body portion having annular, inwardly projecting means therein for yieldingly engaging the outer peripheral surface of such a plug when said plug is mounted in said body portion in electrical connection with such a receptacle
h. said annular inwardly projecting means comprising
(1) an annular, inwardly projecting shoulder in said front end portion of said body portion, and
(2) an annular inwardly projecting shoulder disposed between and spaced from said first mentioned shoulder and said rear end portion of said body portion.

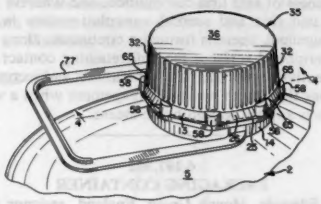
4,197,960

PILFERPROOF CONTAINER

John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Nov. 1, 1978, Ser. No. 956,773
Int. Cl.[2] B65D 41/32, 41/34
U.S. Cl. 220—266 16 Claims

1. In a closure, the combination of a container having a threaded neck with an outwardly projecting locking means thereon, a cap having a threaded skirt adapted to be threaded onto the neck, a continuous stretchable plastic anti-pilfer band having a tear-apart connection with the skirt, means on the band and said locking means for stretching said band over said locking means and disposing the same in locked position therewith attendant to initial threading of the cap on the neck, and means on said locking means and said band for holding said band in locked association with said locking means and preventing said band from releasing from said locking means, said



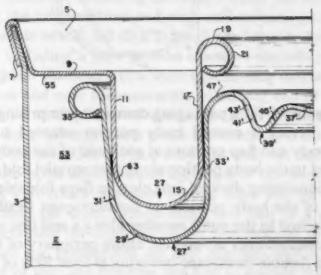
connection being formed and arranged to tear apart upon said cap being initially unscrewed to open the container, and means for holding said band at circumferentially spaced points from entering under said shoulder and stretching said band as chordal segments beneath said shoulder.

4,197,961

CONTAINER AND LIP ATTACHMENT THEREFOR

Alston C. Sandy, 10520 Scaggsville Rd., Laurel, Md. 20810

Filed Nov. 28, 1978, Ser. No. 964,409
Int. Cl.[2] B65D 25/00, 41/00
U.S. Cl. 220—354 6 Claims



1. In combination, a hollow container provided with a wall, an orifice in said wall, and a lip extending around at least a portion of the peripheral edge of the orifice, and an attachment connected to the container at the lip,
the lip comprising a generally U-shaped first convolution, said first convolution extending downwardly into said hollow container such that the lowermost point of the "U" defines the inward extremity of the first convolution, said first convolution being attached to said wall by a plate means extending between said wall and an uppermost portion of one leg of said "U" such that said first convolution opens outwardly of said container and there is provided between said wall, plate means and said leg an inwardly open area of confinement of substantially uniform width and depth;
the attachment comprising a generally U-shaped second convolution, one leg of said "U" defining an outer peripheral edge of said attachment of substantially the same shape as the leg of the "U" of said first convolution to which said plate means is attached, and the other leg of said "U" of said second convolution having a blade means attached thereto, the dimensions of said U-shaped second convolution being such that the attachment may be con-

nected to the lip by pressing the "U" of said first convolution with its lowermost point leading into the "U" of said second convolution such that the leg of the "U" of said second convolution which defines the outer peripheral edge of said attachment extends into said inwardly open area of confinement thereby to locate said blade means within a portion of said orifice and maintain the outwardly openness of said first convolution; and wherein

when said first and second convolutions are in pressing engagement, there is formed a continuum along portions of peripheral surfaces thereof, retaining contact between respective legs of the "U's" of said first and second convolutions thereby to resist disengagement when a whipping force is applied to said blade means.

4,197,962

PACKAGING CONTAINER

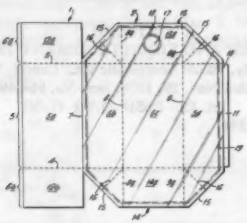
John R. Edwards, Hough Green, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Jun. 20, 1978, Ser. No. 917,268

Claims priority, application United Kingdom, Jun. 24, 1977, 26568/77

Int. Cl.² B65D *5/58*

U.S. Cl. 220—461 **6 Claims**



1. A flat blank for a packaging container comprising an outer member having a central body portion adapted to form a tubular body and flap portions at each end of the body portion connected to the body portion along first parallel fold lines, the flap portions being divided into closure flaps foldable to close the ends of the body portion, an uninterrupted flexible membrane attached to the outer member along a seal line extending without discontinuity around the entire periphery of the membrane, the flexible membrane covering at least 50% of the body portion between the seal lines and extending over uninterrupted integrally connected flap portions adjacent thereto and a filling and dispensing aperture in the outer member covered by the membrane, said body portion being provided with a number of second parallel fold lines which are transverse to the first parallel fold lines, said second parallel fold lines dividing the body portion into a plurality of body panels, said body portion being divided into four body panels each having closure flaps attached thereto at opposing ends, the flexible membrane covering three of said body panels and their adjacent closure flaps.

4,197,963

END CLOSURE FOR LINED CARTONS

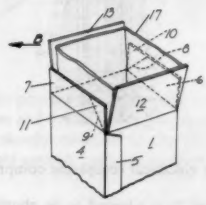
Robert W. Nerenberg, Middletown, Ohio, assignor to The Interstate Folding Box Company, Middletown, Ohio

Filed Jan. 2, 1979, Ser. No. 145

Int. Cl.² B65D *5/56*

U.S. Cl. 220—462 **2 Claims**

1. In a prelined carton formed from a knocked-down tubular carton structure having opposing pairs of enclosing body walls with upper and lower ends, bottom closure flaps hingedly connected to the lower ends of said body walls, and a liner in said carton structure adhesively secured to the carton body walls, the liner having a mouth extending outwardly beyond the upper ends of the carton body walls, an improved top closure comprising a pair of innermost end closure flaps hingedly connected to the upper ends of a first pair of said opposing body walls and a pair of outermost closure flaps hingedly connected to the upper ends of the remaining pair of opposing carton body walls, said innermost end closure flaps each having an outermost side edge and an opposing pair of end edges, the combined widths of said innermost closure flaps being no greater than the cross-sectional distance between said first pair of opposing body walls when the carton is fully erected, a triangular tab having a base edge and a pair of side edges formed in each of said innermost closure flaps at one end thereof by a diagonal score line defining the base edge of said tab, one side edge of the tab being defined by an end edge of



the closure flap and the other side edge by a portion of the outer side edge of the said flap, said tabs lying adjacent different ones of said outermost closure flaps and being adhesively secured to the abutting portions of the liner mouth, the tabs acting to draw the mouth of the liner to fully erected condition as the carton body walls are erected, the triangular tabs being foldable inwardly to overlie the innermost closure flaps and sandwich portions of the liner mouth therebetween as an incident of expanding and flattening the liner mouth in the direction of said innermost closure flaps, the infolded triangular tabs serving to stabilize the flattened liner mouth for sealing and also serving as folding edges for portions of the liner mouth as the innermost closure flaps are infolded as an incident of closing and sealing the top closure.

4,197,964

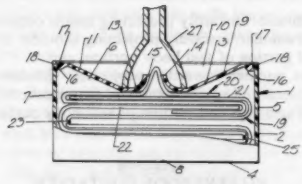
STARTER MEANS FOR A POP-UP TYPE SHEET PRODUCT DISPENSING PACKAGE HAVING A RESTRICTIVE DISPENSING ORIFICE

Rochelle Y. Pryor, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 10, 1978, Ser. No. 932,663

Int. Cl.² A47K *10/20*

U.S. Cl. 221—50 **9 Claims**



1. In a package of the type dispensing individual product sheets one at a time in pop-up fashion alternately from discrete, first and second continuous webs of product sheets, said product sheets of each of said webs being defined by lines of perforations extending transversely of said web, said webs being located in face-to-face relationship with said lines of perforations of each of said webs being located midway between said lines of perforations of the other of said webs, said webs also being interfolded to form a stack of product sheets wherein

said product sheets of each of said webs are folded at about their midpoints and are interleaved with said product sheets of the other of said webs with the first half of the first of said product sheets of said first web overlying the first half of the first of said product sheets of said second web at the top of said stack, said package comprising a tray portion to receive said stack of product sheets and a cover member for said tray portion to close said tray portion, said cover member having a restrictive dispensing orifice of such size that the consumer could not start said first product sheet of said first web through said dispensing orifice with his fingers, the improvement comprising a starter sheet, said starter sheet being formed into a Z-fold overlying and underlying said first half of said first product sheet of said first web and partially underlying said first half of said first product sheet of said second web, said cover member overlying said starter sheet, a portion of said starter sheet extending through said restrictive dispensing orifice, said last mentioned portion of said starter sheet being of sufficient length as to be conveniently grasped by the fingers of said consumer.

4,197,965

TOOTHPICK DISPENSER

Curtis T. Manz, 534½ E. 14th St., Long Beach, Calif. 90801

Filed Jul. 7, 1978, Ser. No. 922,768
Int. Cl.² B65D *85/20*
U.S. Cl. 221—266 **3 Claims**

1. A light weight portable toothpick dispenser that maintains the toothpicks in a clean and sanitary condition, and from which dispenser the toothpicks may be removed one by one as required, which dispenser includes:

a. an elongate container having first and second closed ends and a continuous side wall that cooperates with said first and second ends to define a confined spaced in which a plurality of toothpicks may be disposed, with the interior surfaces of said first and second ends being longitudinally spaced a distance slightly greater than the length of said toothpicks;

b. an elongate member longitudinally disposed in said confined space and disposed adjacent to said side wall, said member having a first side surface in which a longitudinally extending groove is formed that removably engages and supports one of said toothpicks when said container is held in a substantially horizontal position and slowly rotated on the longitudinal axis thereof until said engagement is effected; and

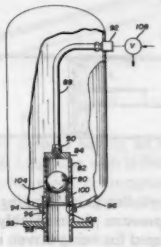
c. said elongate member being slidably mounted for longitudinal movement in an opening in said first end, said member being of substantially greater length than the length of said confined space, said member including first and second longitudinal sections, said first section being disposed in said confined space and said second section disposed exteriorly of said first end when said member is in a first position, said first section having said longitudinal groove therein with a toothpick being dispensed when said first section of said member and said toothpick supported in said groove are concurrently moved outwardly through said open end to a position exterior of said container, said groove adjacent a free end of said first section of said member tapering inwardly to prevent a second one of said toothpicks that rests on said toothpick in said groove being withdrawn through said opening.

4,197,966

AIR BLASTER OR AIR ACCUMULATOR AND QUICK DUMP APPARATUS

Theodore S. Wadensten, Wyoming, and Alfred Carocci, Johnston, both of R.I., assignors to Vibco, Inc., Wyoming, R.I.

Filed Sep. 25, 1978, Ser. No. 945,457
Int. Cl.² G01F *11/00*
U.S. Cl. 222—1 **5 Claims**



1. An air accumulator and quick release apparatus for producing a blast of air into a storage means for material which is not always free flowing and requires an assist, said apparatus including: (a) a pressure tank having a large outlet at one portion thereof; (b) a removable mounting carried in and by the large outlet, the mounting carrying a quick release apparatus within the pressure tank and with said mounting insertable and removable within the tank through the large outlet; (c) the mounting including a pipe portion having a smoothly formed bore of regular diameter; (d) a front tubular stop carried in said pipe portion and near the outwardly extending end of the pipe portion; (e) a multiplicity of discharge holes formed in said pipe, said holes arranged in a plane substantially transverse to the axis of the smoothly formed bore and with the outer facing edges of the holes adjacent and upstream of the front tubular stop; (f) a ball freely movable in said bore and of a larger diameter than the front tubular stop, said ball of a diameter which is less than the diameter of the pipe portion to provide a flow path for pressurized air past the ball and a forward movement of this ball to cause the ball to engage the tubular stop to close the pipe portion front outlet to a flow of pressurized air with the discharge holes being forwardly of the center line of the ball in the forward position; (g) a rear end closure of the pipe portion; (h) an air inlet means connected to said pipe portion and with said front outlet disposed downstream of the ball when said ball is in its most rearward condition, the air inlet supplied by pressurized air through a conduit extending from the outer surface of the pressure tank; (i) rear sealing means disposed in the pipe portion so that as and when the ball is moved upstream the ball substantially shuts off flow of pressurized air from the tank to the conduit, and (j) a quick acting three-way valve disposed so as to receive pressurized air from a supply and feed it to the conduit within the tank whereupon the ball is moved downstream to close the large outlet of the pipe portion and to allow the pressurized air to flow around the downstream positioned ball and through the discharge holes into the tank to charge said tank, and when a quick dump or blast is to be made the three-way valve is manipulated to shut off pressurized air to the conduit and to open said conduit to the atmosphere, the pressure in the tank engages the front surface of the ball to urge it, the ball, upstream fully uncovering the discharge holes and the forward outlet and with the ball engaging the rear sealing means to substantially close the conduit to unwanted rearward release of pressurized air from the tank.

4,197,967
PISTON-CYLINDER UNIT PARTICULARLY FOR AN EXTRUSION CARTRIDGE

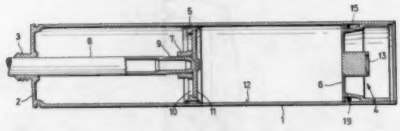
Fritz Baur, Leverkusen, and Gunther Stemmer, Ennigerloh, both of Fed. Rep. of Germany, assignors to Denso-Chemie Wedekind KG, Leverkusen and Peter Lancier Maschinenbau-Hafenhutte GmbH & Co. KG, Munster-Wolbeck, both of, Fed. Rep. of Germany

Filed Aug. 9, 1978, Ser. No. 932,112

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736144; Mar. 13, 1978, 2810755

Int. Cl.[2] B67D *5/42*

U.S. Cl. 222—190 **8 Claims**



1. In a piston-cylinder unit including a cylinder having an inner wall face; a pressure piston slidably accommodated in the cylinder and arranged for being driven into the cylinder by an external force; the cylinder defining a cylinder chamber in which pressure is generated by the pressure piston forced into the cylinder; the pressure piston having a radial bottom and a generally cylindrical outer face extending axially away from the piston bottom; sealing means carried by the pressure piston for sealingly engaging said inner wall face; the improvement comprising a dividing means arranged in said cylinder chamber for dividing said cylinder chamber into axially adjacent part chambers; said dividing means comprising

(a) a mixing piston slidably arranged in said cylinder and including

(1) an outer face for engaging the inner face of said cylinder;

(2) means defining a throughgoing threaded central opening;

(3) means defining at least one throughgoing aperture adjacent said central opening;

(4) retaining means;

(b) a washer disc normally firmly held on said mixing piston by said retaining means for sealing off said central opening; and

(c) a mixing rod axially introduceable into said cylinder through a cylinder end remote from said pressure piston and threadedly receiveable by said central threaded opening; said washer disc being axially disengageable from said retaining means by said mixing rod for establishing communication between said part chambers through said aperture.

4,197,968
SYNTHETIC-RESIN AND METALLIC LAYERED WATCHBAND

Roland Ullmann, Hausen, and Klaus Zimmermann, Bremthal, both of Fed. Rep. of Germany, assignors to Braun AG, Frankfurt am Main, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 901,703

Claims priority, application Fed. Rep. of Germany, May 2, 1977, 2719480

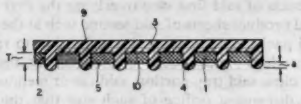
Int. Cl.[2] A45C *11/10*

U.S. Cl. 224—178 **8 Claims**

1. A bracelet comprising:

a substantially continuous and one-piece flexible metal strip formed with a generally uniform array of perforations over generally all of its surface and having an inner face and an outer face; and

a flexible synthetic-resin strip overlying said metal strip at said outer face thereof and unitarially formed with a multiplicity of bosses each extending through a respective perforation and each forming a bump extending beyond said inner face, said bumps extending by a distance such



that when the bracelet is worn about the wrist the bumps provide for ventilation of the wrist between the bumps.

4,197,969
PAPER FEED MECHANISM

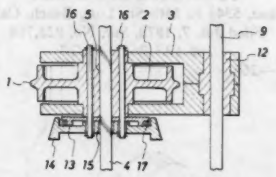
Masao Sasaki, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 30, 1978, Ser. No. 910,389

Claims priority, application Japan, Jun. 16, 1977, 52-070484

Int. Cl.[2] G03B *1/24*

U.S. Cl. 226—79 **4 Claims**



1. In a paper feed mechanism comprising a sprocket wheel which has a plurality of sprocket pins for feeding a printing paper, a drive shaft for rotating the sprocket wheel, a frame for rotatably supporting the sprocket wheel, a guide shaft for slidably supporting the frame, the improvement comprising: a disc which is fixed to the sprocket wheel, a detaining knob which has a shaft hole for inserting the drive shaft and is rotatably fitted to the disc, a spring having one end fixed to the disc and, the other end fixed to the detaining knob for rotating each of them conversely about the drive shaft, the peripheral wall defining said shaft hole providing a close fit with the drive shaft to transmit the rotative force of the drive shaft to the sprocket wheel without play, as well as to detain the sprocket wheel at a desired position by operating the detaining knob.

4,197,970
ELECTROSTATIC DRIVE SYSTEM

John D. Plumadore, Westfield, Mass., assignor to James River Graphics Inc., South Hadley, Mass.

Filed Mar. 8, 1978, Ser. No. 884,681

Int. Cl.[2] B65H *17/28*

U.S. Cl. 226—94 **9 Claims**

1. An apparatus for transporting a recording medium from a supply to a take-up means, said medium having an insulative layer, a conductive layer overlying the insulative layer and a photoconductive layer overlying the conductive layer, said apparatus comprising:

(a) means coupled to the conductive layer of the recording medium for maintaining the conductive layer of the recording medium at a first desired potential;

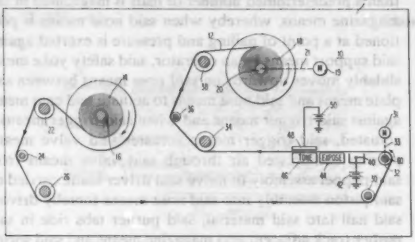
(b) a rotatably mounted roller having a peripheral layer of conductive material that contacts a surface of the recording medium;

(c) a slip ring secured to and rotatable with the roller, the slip ring being electrically connected to the conductive layer of the roller;

(d) a brush for making electrical contact with the slip ring;

(e) a voltage supply electrically connected to the brush for

applying a second desired potential to the conductive layer of the roller thereby developing an electrostatic attractive force between the conductive layer of the roller and the conductive layer of the recording medium; and



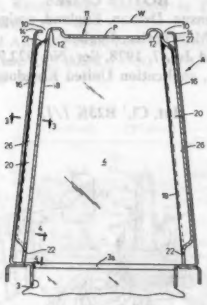
(f) means for driving the roller at a constant angular velocity whereby the recording medium is fed at a constant linear velocity from the supply to the take-up roll.

4,197,971

HIGH VELOCITY WEB FLOATING AIR BAR HAVING AN INTERNAL PASSAGE FOR TRANSVERSE AIR DISCHARGE SLOT MEANS

Paul H. Stibbe, DePere, Wis., assignor to W. R. Grace & Co., New York, N.Y.

Filed Oct. 12, 1978, Ser. No. 950,746
Int. Cl.[2] B65H *17/32*
U.S. Cl. 226—97 **6 Claims**



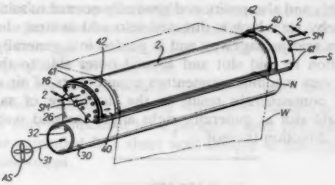
2. An elongated air bar assembly for being positioned transversely of and adjacent to a running web for supporting said web on a cushion of air, said elongated assembly comprising, an outer side adapted to be positioned closely adjacent said web, an inner side having means communicating with an air supply, and two opposite and spaced apart side walls which together with said outer and inner sides define a pressurizable central chamber into which pressurized air is conducted, an air discharge slot located along each longitudinal edge of said outer side, said slots being defined by said outer side and said side walls, said inner wall means located along and adjacent to, but spaced inwardly from said side walls, said inner walls extending generally coextensive in size with said side walls to thereby define therewith air delivering passageways to said slots, said passageways being in air receiving communication at a location generally adajcent said inner side and with said central chamber for receiving pressurized air from said central chamber, whereby the air entering said central chamber then enters said passageways for discharge through said slots for impingement against said web.

4,197,972

CONTACTLESS TURNING GUIDE HAVING AIR SLOTS LONGITUDINALLY ALONG RUNNING WEB EDGES

Robert A. Daane, Green Bay, Wis., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,468
Int. Cl.[2] B65H *17/32*
U.S. Cl. 226—97 **10 Claims**



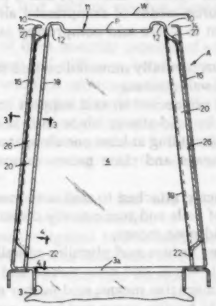
1. A contactless web support having an elongated arcuate surface and over which a running web is floatingly supported without contact therewith, a pair of elongated nozzles extending along the length of said elongated arcuate surface and circumferentially spaced apart from one another, said nozzles having discharge slots directed toward one another and over said arcuate surface to thereby form a web support fluid pressure zone between said arcuate surface and the web passing thereover, a pair of air slots on said support and extending transversely of said support and in the direction of web movement, one of said slots being located adjacent each of the side edges of said running web and outwardly thereof so as to direct pressurized air toward said web to thereby trap the air in said web support fluid pressure zone and to prevent lateral drifting of said web on said support and providing a lateral guiding action therefor, and means for supplying pressurized air to said nozzles and said slots.

4,197,973

HIGH VELOCITY WEB FLOATING AIR BAR HAVING AIR FLOW STRAIGHTENING MEANS FOR AIR DISCHARGE SLOT MEANS

Robert A. Daane, Green Bay, Wis., assignor to W. R. Grace & Co., New York, N.Y.

Filed Oct. 12, 1978, Ser. No. 950,745
Int. Cl.[2] B65H *17/32*
U.S. Cl. 226—97 **10 Claims**



2. An elongated air bar for being positioned transversely of and adjacent to a running web for supporting said web and comprising, an outer side adapted to be positioned closely adjacent said web, an inner side having means communicating with an air supply, and two opposite and spaced apart side walls which together with said outer and inner sides define a pressurizable central chamber into which pressurized air is

conducted, an air discharge slot located along said outer side, said slot being defined by said outer side and one of said side walls, and inner wall means located along and adjacent to, but spaced inwardly from said one of said side walls to thereby define therewith an air delivering passageway to said slot, said passageway being in air receiving communication with said central chamber for receiving pressurized air therefrom, air flow straightening means located in said passageway and positioned transversely therein with respect to said elongated air bar assembly and also positioned generally normal to said outer side whereby air which is directed into said central chamber then enters said passageway and is guided in a generally normal direction to said slot and to said outer side to thereby dissipate cross machine momentum components of air movement and consequently result in the discharge of said air through said slot at generally right angles to said web in a transverse direction thereof.

4,197,974

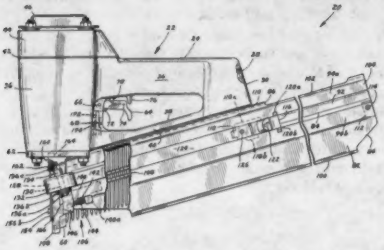
NAILER

Randolph J. Morton, Deephaven; Lee R. Suchy, Eden Prairie, and Glenn F. Wahlquist, White Bear Lake, all of Minn., assignors to Speedfast Corporation, Tulsa, Okla.

Filed Jun. 12, 1978, Ser. No. 914,596

Int. Cl.[2] B25C *1/04*

U.S. Cl. 227—8 **29 Claims**



1. A nailer supporting a magazine means which dispenses nails successively from a plurality of nails for repeatively driving one nail at a time into material comprising:

a. means supporting a pneumatic system including a cylinder assembly, a piston assembly mounted within said cylinder assembly and having a driver blade attached to said piston assembly in said cylinder assembly, a poppet assembly covering said cylinder assembly, and a means connected between source means of compressed air and said pneumatic system to valve said compressed air to said poppet assembly;

b. trigger means pivotally mounted on said support means to actuate said valve means;

c. nose means connected to said support means to guide a nail driven by said driver blade into said material, said nose means including at least one elongated boss means on said nose means and plate means secured to said boss means;

d. magazine means attached to said nose means to magazine a plurality of nails and successively dispense one nail at a time into said nose means;

e. pusher means to bias said plurality of nails in said magazine means towards said nose means and traveling adjacent to said magazine means, said pusher means including a pusher body having upper and lower pusher rail tabs, a pusher track adjacent said magazine means and spring means mounted between said nose means and said pusher means;

f. safety yoke means including at least one elongated hole means movably slidable on said nose means between said nose means and said plate means and means biasing said safety yoke means away from said support means;

g. means positioned between said safety yoke means and said trigger means to cam said trigger means, thereby permitting said trigger means to actuate said valve means; and,

h. safety yoke detent means slidably within said magazine means, means biasing said safety yoke detent means away from a detent notch in said safety yoke means when more than a predetermined number of nails is magazined in said magazine means, whereby when said nose means is positioned at a point of nailing and pressure is exerted against said support means by an operator, said safety yoke means slidably moves upwards on said nose means between said plate means and said nose means to actuate said cam means against said trigger means and when said trigger means is actuated, said trigger means actuates said valve means, passing compressed air through said valve means from said poppet assembly to move said driver blade carried on said piston assembly into said nose means thereby driving said nail into said material, said pusher tabs ride in said pusher track adjacent said magazine means and said spring means biases said pusher means towards said nose means on said pusher track thereby biasing said nails in said magazine means towards said nose means and said pusher means actuates said safety yoke detent means into said detent notch and said safety yoke means when a predetermined number of nails remain in said magazine means and said nose means.

4,197,975

POOL BRAZING APPARATUS FOR MANUFACTURING ROTOR CAGES

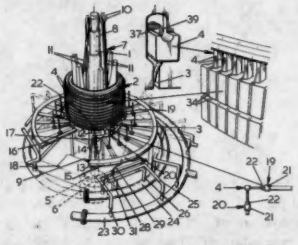
Terence J. Williamson, Denton, England, assignor to Mather & Platt Limited, Manchester, England

Filed Jul. 7, 1978, Ser. No. 922,702

Claims priority, application United Kingdom, Oct. 14, 1977, 42741/77

Int. Cl.[2] B23K *1/12*

U.S. Cl. 228—48 **6 Claims**



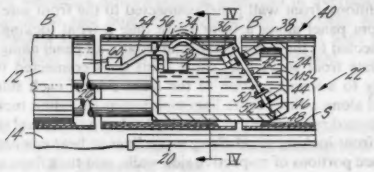
1. A rig for pool brazing an end member to one end of each of a plurality of bars during the production of a cage rotor, the rig comprising: a chuck for gripping one end of a shaft of the rotor, support means to retain the other end of the shaft whereby together with the chuck the rotor can be retained in a substantially vertical position, means for driving the chuck to rotate the rotor, a circular sector ring framework horizontally arranged around the chuck and defining a gap proximate a lower end of the rotor whereat a rig operator can stand, and a plurality of gas burner means mounted on and spaced around the framework whereby, in use, the said one ends of the bars and the end member to be brazed together can be evenly heated as the rotor is rotated and the operator can feed a brazing fluid between the end member and the said one end of each bar in turn.

4,197,976

INSIDE SIDE-SEAM SOLDERING MACHINE

Frederick S. Sillars, Beverly, Mass., assignor to USM Corporation, Farmington, Conn.

Filed May 19, 1978, Ser. No. 907,666
Int. Cl.[2] B23K 1/14
U.S. Cl. 228—43 **7 Claims**



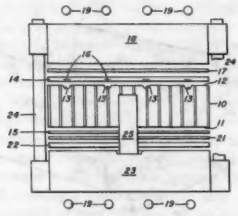
1. Apparatus for soldering internally the aligned side seams of successive can bodies being advanced by feed mechanism along and from a stub horn, comprising a reservoir for molten solder supported by the stub horn and disposed within the path of the bodies, and an applicator means mounted on the reservoir and arranged for directing molten solder therefrom to the internal openings of the successive side seams, said applicator means comprising a can-body actuatable valve, operable to close when there is an interruption in the flow of cans along the stub horn for controlling jet flow of molten solder from an aperture in the reservoir.

4,197,977

METHOD OF MAKING AN ACTIVELY-COOLED TITANIUM STRUCTURE

Czeslaw Deminet, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 20, 1978, Ser. No. 898,277
Int. Cl.[2] B23K 19/00, 31/02
U.S. Cl. 228—106 **9 Claims**



1. A method of making a diffusion bonded composite metallic structure of material selected from the group consisting of titanium and titanium-based alloys, said method including the steps of:

providing a cellular core component of said metallic member, said cellular core component having a plurality of cellular core elements with exposed core wall end surfaces,

forming a pattern of recesses in the core wall end surfaces at one face of the cellular core component,

providing a face sheet component of said metallic material having an internal opening defined therein to extend along the pattern of recesses in the cellular core component,

assembling the face sheet component and the cellular core component in a furnace with the internal opening in the face sheet component superimposed and aligned with the pattern of recesses in the cellular core component,

coupling an inert gas supply to the internal opening in the face sheet component,

heating the components in the furnace to a bonding temperature and urging the face sheet component into contact with the cellular core through a yieldable medium against the opposed surface of said face sheet component for a sufficient period of time to diffusion bond the cellular core component to the face sheet component, the contact pressure being less than a pressure which would cause significant deformation of the cellular core component,

delivering an inert gas into the internal opening within the face sheet component while in a heated state in the furnace to expand the face sheet wall surface to the internal opening into said recesses in the cellular core component by superplastic forming, and

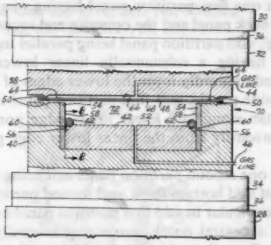
maintaining the expanded face sheet wall surface under sufficient contact pressure within the recesses in the cellular core component for a period of time to diffusion bond the expanded face sheet wall surface to the cellular core component.

4,197,978

METHOD OF MAKING AN INTEGRAL STRUCTURAL MEMBER

James R. Kasper, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 29, 1978, Ser. No. 920,901
Int. Cl.[2] B23K 19/00
U.S. Cl. 228—173 A **18 Claims**



1. A method of making an integral structural member including at least two distinct portions, said method comprising the steps of:

providing a die including a forming surface,

placing a first member capable of exhibiting diffusion bonding properties and defining a first surface portion in said die with said first surface portion facing said forming surface,

placing a slug of fillet material capable of exhibiting superplastic forming and diffusion bonding properties in said die adjacent said first surface portion of said first member,

placing a second member capable of exhibiting superplastic forming and diffusion bonding properties and defining first and second surface portions in said die with said first surface portion covering said forming surface and said first member,

heating said second member and said fillet material to a superplastic forming temperature,

applying a pressure against said second surface portion of said second member to cause said second member to form against a portion of said first member, against said fillet material, and against said forming surface, and to cause said slug of fillet material to form against said first member and against said die, thereby providing a fillet between the distinct portions of the structural member which extends on both sides of one of said two distinct portions, and

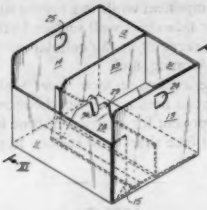
maintaining the temperature and pressure in said die at diffusion bonding levels for a period of time sufficient to produce diffusion bonding between said first and second members and to produce diffusion bonding of said slug of fillet material to said first and second members.

4,197,979

PARTITIONED CARTON

Daniel P. Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 8, 1978, Ser. No. 884,615
Int. Cl.[2] B65D 5/48
U.S. Cl. 229—29 D **16 Claims**



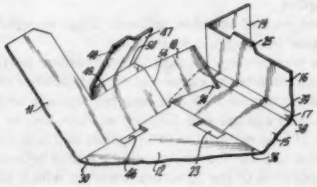
1. A partitioned carton comprising:
a pair of generally parallel front and back panels;
a pair of generally parallel side panels connecting said front and back panels to form a generally rectangular tube;
bottom flaps extending from the lower edge of each of the above identified panels, said bottom flaps extending along a single plane;
at least one first partition panel having one end secured to said back panel and the opposite end secured to said front panel, said partition panel being parallel to said side panels and having a substantially linear lower edge portion spaced upwardly from the lower edges of said front, back and side panels, said first partition panel including a central tab along said linear lower edge portion projecting downwardly from the linear lower edge portion thereof; and
at least one second partition panel extending upwardly from one of said bottom flaps, said second partition panel being perpendicular to said first partition panel and having a tab, with a central notch, projecting inwardly from the top edge thereof to frictionally lock said second partition panel with said first partition panel along its linear lower edge portion, whereby said partition panels subdivide the rectangular tube into a plurality of compartments, the depth of said central notch being less than the extent of the downward projection of said central tab so that said central tab will bear against said second partition panel.

4,197,980

BOX WITH REINFORCED CORNERS

Ronald V. Johnson, Port Washington, Wis., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 21, 1978, Ser. No. 971,887
Int. Cl.[2] B65D 5/24, 5/22
U.S. Cl. 229—34 R **4 Claims**



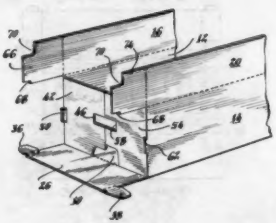
1. A storage bin assembled by folding a one-piece card- or corrugated board structure, comprising: a bottom panel; two opposite side wall panels connected respectively to lateral sides of the bottom panel along lateral score lines; rear wall panel connected to the rear side of the bottom panel along a rear score line; a rear locking panel connected to the other side of the rear wall panel along intermediate rear score lines; rear flaps connected to the rear side of each side wall panel and foldable about the score line; rear locking means including rear lock tabs projecting respectively from lateral sides of said rear locking panel, said side wall panels including rear locking slots provided respectively in the rear end portions thereof to receive said rear lock tabs when said bin is folded in its assembled conditions; front wall panel connected to the front side of the bottom panel along a front score line; a front locking panel connected to the other side of the front wall panel along intermediate front score line; short front flaps connected respectively to a lower portion of the front side of each side wall panel along a short score line; tuck means including tuck flaps connected respectively at their short sides to the lateral sides of said front locking panel along score lines to bear against inner surface portions of respective side walls, said tuck flaps including tuck flap portions connected laterally to said front locking panel and foldable about parallel score lines, said side walls including tuck slots provided in the front end portion thereof opposite said short front flap and being spaced apart from the latter approximately a distance corresponding substantially to the length of one of said tuck flap portions, with the remaining tuck flap portions passing from inside to outside of said bin through said tuck slot and with a tuck flap portion being inserted into the space between said short front flap and said front locking panel for engaging and locking in position said tuck flaps; and front locking means including front lock tabs projecting from the other side of the front locking panel; with said bottom panel including front lock slots provided in the front end portion thereof for engaging said front lock tabs when the bin is in its assembled condition.

4,197,981

SELF-LOCKING, RECLOSABLE CARTON

Gordon A. Hamilton, Highland Springs, Va., assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 5, 1978, Ser. No. 939,841
Int. Cl.[2] B65D 5/30
U.S. Cl. 229—36 **2 Claims**



1. A self-locking, reclosable carton comprising:
a generally rectangular floor panel;
first and second generally rectangular side wall panels extending upwardly from opposite side edges of said floor panel;
an end wall assembly at each end of said carton, each said assembly including a generally rectangular outer end panel extending upwardly from an end edge of said floor panel, said outer end panel being secured in slightly spaced relation to said side wall panels, each said end wall assembly further comprising first and second inner end panels, each of which is foldably connected to an end edge of one of said side wall panels and extends at right angles thereto, each said inner end panel having a tab scored therein the fold line defining the end edge of said wall panel, said scored tab forming a narrow opening at the fold line, while said outer end panel has tab members extending from opposite side edges, said tab members being received within said narrow openings to lock the

outer end panel in place in slightly spaced relation to said inner end panels wherein one of said tab members on each said outer end panel is longer than the other so as to be first to be inserted through one of the narrow openings at the end edges of the side wall panels; and

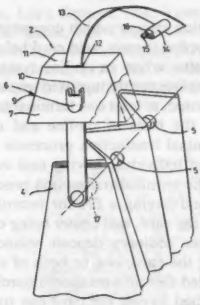
a cover assembly for said carton including at least one generally rectangular cover panel connected to the upper edge of one of said side wall panels, said cover panel having end flaps extending downwardly at each end in overlapping relation to said outer end panels, said end flaps being releasably restrained by frictional engagement with said end panels to maintain a closed carton condition.

4,197,982

DEVICE FOR THE INVIOLABLE CLOSING OF BAGS

Eduardo de Lima Castro Netto, Rua São Luiz Gonzaga 912, São Cristovão, Rio de Janeiro, Brazil

Filed Jul. 11, 1978, Ser. No. 923,748
Claims priority, application Brazil, Oct. 20, 1977, 7707029
Int. Cl.[2] B65D *33/16*
U.S. Cl. 229—62 **14 Claims**



1. Device for the inviolable closing of bags comprising a housing having a top wall, first and second larger opposite side walls and first and second smaller opposite side walls, with an open bottom destined to receive the mouth of a bag in a folded condition, at least one rod having a length at least equal to the separation between said two larger walls, the said larger walls of the housing being formed with respective first and second aligned openings dimensioned to receive the said rod, and immobilizing means permitting substantial immobilization of said rod with respect to said two larger walls and comprising seal receiving means in the form of a rectangular bridge at one end of said rod defining a rectangular opening transverse with relation to the length of said rod and an outer capsule on said second larger side wall of said housing, said capsule covering said second opening and being formed with a lateral rectangular opening, said lateral rectangular opening of said capsule being aligned with said rectangular opening of said bridge when in the immobilized position to receive a security seal inserted through said rectangular openings in the capsule and the bridge.

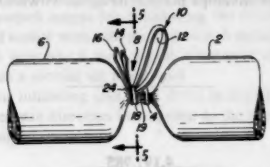
4,197,983

HANGER-CLIP CLOSURE FOR CASINGS

Vytas A. Raudys, and Ronald R. DeVitto, both of Chicago, Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jul. 19, 1976, Ser. No. 706,353
Int. Cl.[2] B65D *33/30*
U.S. Cl. 229—65 **10 Claims**

1. A casing having one end gathered and secured to a combination end closure and loop hanger comprising a strip of tape looped with at least one free end positioned adjacent to and longitudinally aligned with the gathered end of the casing and secured thereaft with a U-shaped clip having a pair of opposed legs and a crown connecting said corresponding end of said legs with the internal length of the crown being smaller than the width of said at least one free end of the tape, and wherein said clip legs being bent to ovally encircle said gathered casing end and said at least one free end of the tape in pressure engagement such that said at least one free end of the tape is disposed adjacent to the crown of the clip and crimped and secured between said legs thereby securing said tape loop hanger to the gathered end of the casing so that said loop is readily available for grasping and/or hanging the casing.

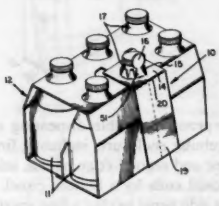


4,197,984

COMPOSITE ENVELOPE

Robert Hartman, Woodstock; Thomas E. Hopkins, Doraville, and Robert P. Goldstein, Atlanta, all of Ga., assignors to Dittler Brothers, Inc., Atlanta, Ga.

Filed Oct. 23, 1978, Ser. No. 953,552
Int. Cl.[2] B65D *27/06, 33/14*
U.S. Cl. 229—74 **4 Claims**



1. A composite envelope structure, comprising:

a multiple panel blank;

at least two parallel fold lines dividing said blank into a left panel, a center panel, and right panel, for folding said left panel over said center panel along the first of said fold lines and for thereafter folding said right panel over said left panel folded over said center panel;

a line of perforations formed in said blank dividing said blank and each panel into an upper tab portion and a lower envelope portion detachably connected to said upper tab portion;

remoistening glue disposed on said envelope portion on said right panel;

glue disposed on said tab portion for fastening the tab portion of said left panel to the tab portion of said center panel and for fastening the tab portion of said right panel to at least the tab portion of said left panel;

glue disposed at the upper edge of said envelope portion of said left panel for fastening the upper edge of the envelope portion of said left panel to the upper edge of the envelope portion of said center panel;

glue disposed at the lower edge of said envelope portion of said left panel for fastening the lower edge of the envelope portion of said left panel to the lower edge of the envelope portion of said center panel with the lower edge of said right panel being free of glue except for said remoistening glue,

so that said tab portions become folded on each other and adhered to each other to form a rigid tab, and said envelope portion becomes folded to form an envelope which is

detachably connected to said rigid tab along said line of perforations and;

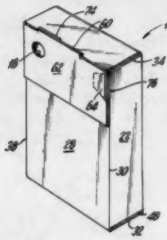
an opening formed through said rigid tab away from said line of perforations whereby the envelope structure is folded along said line of perforations, the opening inserted about an upwardly extending bottle neck or the like and the lower envelope portion hangs downwardly beside the bottle.

4,197,985

TAMPERPROOF DISPENSING CARTON AND BLANK THEREFORE

John J. Austin, Hinsdale, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 2, 1979, Ser. No. 16,812
Int. Cl.[2] B65D *5/76, 5/00*
U.S. Cl. 229—17 SC **16 Claims**



1. A tamperproof reclosable dispensing carton comprising an elongated tubular enclosure, including first and second side panels, and first and second edge panels, said enclosure being closed at opposed ends by a bottom panel, and an inner top panel, said first side panel having a first aperture disposed at an upper top corner thereof;

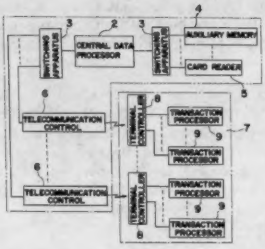
a dispensing panel including in turn, and hingedly connected, an outer top section, an apertured section, a middle section, and a slidable closure section, with said outer top section being hingedly connected to said second side panel and disposed in abutting relation with said inner top panel, and with said apertured section being disposed parallel and spaced from said first side panel, and having a second aperture which is in register with said first aperture, said apertured section further including a cover tab, rupturably connected thereto and disposed along the side edge of said apertured section opposed to said second aperture, and wherein the hinged connection between said middle section and said slidable closure section is rupturable, with both said middle section and closure section being disposed intermediate said first side panel and said apertured section, said middle section being adhesively connected to both the outer surface of said first side panel and the inner surface of said apertured section, and with said closure section initially covering said first aperture such that during the first dispensing operation upon the rupturing of the connections to the cover tab, said tab may be completely removed, thereby enabling the connections between said closure section and said middle section to be ruptured to permit slidable displacement of said closure section relative to said apertures thereby uncovering the first aperture in the first side panel and enabling the contents of the carton to be dispensed through the registered first and second apertures.

4,197,986

MONEY TRANSACTION SYSTEM

Masanori Nagata, Nagaokakyo, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Apr. 28, 1978, Ser. No. 901,158
Claims priority, application Japan, Apr. 28, 1977, 52-49375
Int. Cl.[2] G06F *15/30;* **H04Q** *3/48*
U.S. Cl. 235—379 **9 Claims**



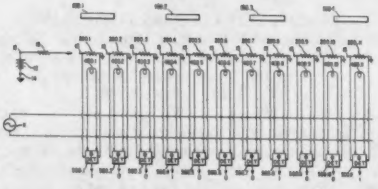
1. In a transaction system which comprises a card having a card balance recorded therein, said card balance being set to a predetermined value when an on-line transaction is effected and also being subsequently updated each time an on-line transaction is effected, at least one terminal transaction processor operable on the basis of on-line and off-line computer scheme, said terminal transaction processor being adapted to be operated by an individual having said card, and a center connected with the terminal transaction processor through an on-line channel and having a file for recording thereon data corresponding to the card, said center being capable of recording on the card an ordinary deposit balance owned by the individual having the card, one or both of said card and said file having recorded therein a maximum purchase amount with which the individual having the card can transact during the off-line transaction scheme, the improvement which comprises a card balance updating means for updating the card balance and the ordinary deposit balance during the on-line transaction scheme as a result of comparison, performed prior to the intended transaction, between the card balance and the maximum purchase amount, whereby cash can be dispensed to the individual during the off-line transaction scheme within the framework of the maximum purchase amount even after the operation by the individual during the on-line transaction scheme involving no cash transaction.

4,197,987

DEVICE FOR DETECTING MAGNETIC FIELDS AND METHOD OF MAKING SAME

Jean-Pierre Lazzari, Montfort L'Amaury, France, assignor to Compagnie Internationale pour l'Informatique, Paris, France

Filed May 31, 1978, Ser. No. 911,100
Claims priority, application France, Jun. 2, 1977, 77 16820
Int. Cl.[2] G06K *7/08;* **G11B** *5/12, 5/30*
U.S. Cl. 235—449 **22 Claims**



2. Apparatus for reading coded fringing magnetic fields

established by magnetic bars having parallel longitudinal axes on documents, said fringing fields extending in opposite directions in response to the magnetic polarization directions of the bars, comprising an array of magnetoresistive elements responsive to a DC energizing current, at least one of said elements being provided for each of the fields, said elements being adapted to be positioned to be responsive to the fringing fields, means for applying an alternating magnetic field of predetermined frequency and phase to each of the elements, said alternating magnetic field being superimposed on the fringing field coupled to each element so that the alternating and fringing fields are combined in each element to modulate the energizing current at the predetermined frequency with a phase determined by the phase of the alternating magnetic field and the fringing field direction, and means for comparing the predetermined phase with the phase of the modulated AC component in each element.

4,197,988

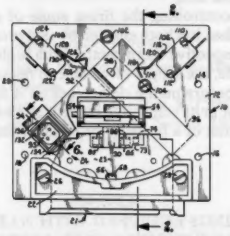
APPARATUS FOR READING AND WRITING DATA ONTO A MAGNETIC STRIPE AND IN AN ARCUATE PATH

Charles A. Moss, Lee's Summit, Mo.; Leon J. Shaneyfelt, Jr., Overland Park, Kans., and Charley W. Hunter, Raytown, Mo., assignors to The Vendo Company, Overland Park, Kans.

Filed Dec. 2, 1977, Ser. No. 839,639

Int. Cl.[2] G06K *7/08*; G07F *7/08*; G11B *25/04*

U.S. Cl. 235—449 **11 Claims**



1. A magnetic stripe card reader/writer apparatus for use as the point of sales input medium in a vending machine, said apparatus comprising:

a card intake channel arranged to receive a magnetic stripe card having a keyed portion establishing a set input orientation, said card intake channel cooperating with the keyed portion of said card to allow for full insertion of said card in only one manner;

means for locking a fully inserted card in a stationary position within said card intake channel;

a read/write head selectively operable to record data onto said card and to reproduce data recorded on said card;

a sensor arm having said read/write head mounted thereon;

a head drive motor having a drive shaft coupled with said sensor arm in spaced apart relationship from said read/write head, said head drive motor being operable to run in a forward direction wherein said drive shaft is made to rotate about its center axis in one direction and a reverse direction wherein said drive shaft is made to rotate about its center axis in a reverse direction;

means for producing a lock signal whenever a magnetic stripe card is locked in place within said card intake channel;

means for causing said head drive motor to run in said forward direction in response to the production of a lock signal to thereby cause said read/write head to move in an arcuate path over the magnetic stripe card locked in place within said card intake channel;

first switching means for monitoring the forward movement of said sensor arm, said first switch means being operable to produce a return signal whenever said sensor arm reaches a first set point;

means for causing said head drive motor to run in said reverse direction in response to the production of said return signal to thereby cause said read/write head to move in an arcuate path over the magnetic stripe card locked in place within said card intake slot in a reverse direction;

second switch means for monitoring the reverse movement of said sensor arm, said second switch means being operable to generate a stop signal whenever the sensor arm reaches a second set point; and

means for inhibiting said head drive motor from running in said reverse direction in response to the generation of said stop signal.

4,197,989

MAGNETIC RECORDING

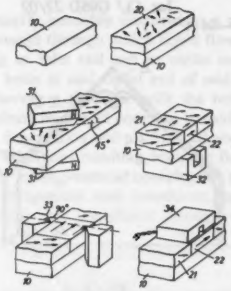
Ralph R. Pearce, West Drayton, England, assignor to EMI Limited, Hayes, England

Continuation of Ser. No. 621,862, Oct. 14, 1975, Pat. No. 4,104,513. This application Jun. 26, 1978, Ser. No. 919,434

Claims priority, application United Kingdom, Oct. 16, 1974, 44748/74; Jan. 29, 1975, 3989/75

Int. Cl.[2] G06K *7/08, 19/06*

U.S. Cl. 235—493 **13 Claims**



1. A magnetizable recording medium of a body of magnetically anisotropic material, the structure of the body including a pattern of a first group of regions all having a distinct permanent magnetic property of an easy axis of magnetization of the material predominantly permanently aligned to a first selected direction and the remaining regions in the structure of the body having an easy axis of magnetization of the material predominately permanently aligned to a second direction, the first and second directions being substantially non-orthogonal.

4,197,990

ELECTRONIC DRAIN SYSTEM

William G. Carberg, Scotia, N.Y., and Mark R. Ford, Jr., Brighton, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,086

Int. Cl.[2] G01N *25/10*

U.S. Cl. 236—1 R **4 Claims**

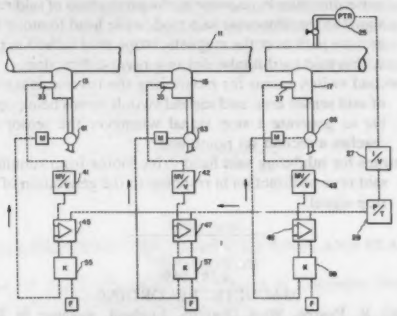
1. A system for automatically operating at least one drain valve in a fluid conduit in accordance with a variable fluid temperature-pressure relation, the system comprising:

means for measuring the actual fluid temperature;

means for measuring the actual fluid pressure;

means for generating a saturation temperature based on the actual fluid pressure;

means comparing the saturation temperature with the actual temperature; and,



means for operating said drain valve in accordance with the output of said comparing means.

4,197,991

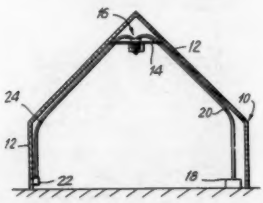
GREENHOUSE ENVIRONMENTAL CONTROL SYSTEM

Cyrus D'Amato, 8 Parkway Dr., Roslyn Heights, N.Y. 11577

Filed Jun. 28, 1978, Ser. No. 919,812

Int. Cl.[2] G05D *22/02*

U.S. Cl. 236—44 A **10 Claims**



1. A greenhouse comprising a plurality of sides and a roof section atop said sides, and means in said roof section to humidify the greenhouse and to circulate air therein while displacing heat downwardly from said roof section, said means comprising a source of water, a solenoid valve connected to said source for the selective release of water, a misting valve coupled to said solenoid valve to form a mist of water released by said solenoid valve, a control to actuate said solenoid valve selectively dependent on the percentage humidity in said greenhouse, two fans adjacent the misting valve, said fans facing downwardly to propel air downwardly in the greenhouse, a source of electrical power connected to the fan, a case having two end portions respectively supporting said fans and supporting the solenoid valve and misting valve between said fans, and means to actuate said fans independently of said misting valve.

4,197,992

THERMOSTAT CONTROL DEVICE

Leonard Klebanoff, 33 Blue Ridge Rd., Willowdale, Ontario, Canada (M2K 1R8)

Continuation-in-part of Ser. No. 850,938, Nov. 14, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 934,870

Int. Cl.[2] F23N *5/20*; G05D *23/00*

U.S. Cl. 236—46 R **4 Claims**

1. In a device for controlling the AC energization of a furnace, air conditioner or the like

two control current paths each including a thyristor for the flow of current to control energization of a furnace, air conditioner or the like;

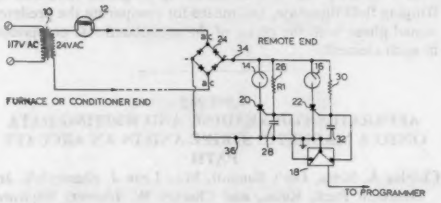
a manually settable programming device operable on a continuous basis from voltage across said thyristors;

each of said thyristors having a thermostat switch adapted to close on achievement of a predetermined temperature associated therewith;

said programming device being adapted to divide time into time slots and having a switching means;

said thyristor of each of said control current paths having control gate;

said switching means being connected to said control gate to



enable the thyristor of a selected one of said control current paths to conduct when its respective thermostat is closed and to disenable the thyristor of the other of said control current paths from conducting in any predetermined time slot;

means for controlling the firing angle of each of said thyristors when it is both enabled by said programming means and its respective thermostat switch is closed to permit, in each cycle, the supply of voltage to operate said manually settable programming device before it fires and the flow of current in its respective control current path to control energization of a furnace, air conditioner or the like after it fires.

4,197,993

DWELLINGS EQUIPPED WITH NATURAL AIR CONDITIONING INSTALLATIONS

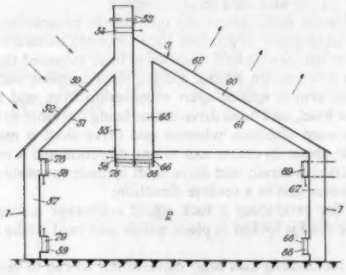
Felix Trombe, Paris, and Jacques Michel, Neuilly-sur-Seine, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Division of Ser. No. 735,037, Oct. 22, 1976, Pat. No. 4,111,359. This application Jun. 16, 1978, Ser. No. 916,297

Claims priority, application France, Oct. 28, 1975, 75 32921; Jun. 30, 1976, 76 19960

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—429 **13 Claims**



1. Dwelling equipped with an airconditioning installation including at least two inclined thermal enclosures forming at least part of the dwelling roofing, comprising:

a first thermal enclosures (hot thermal enclosure) oriented

on the side exposed to the sun, an inner wall element, essentially constituted by a material of very low thermal mass, absorbing radiation of the solar radiation type, of wavelength comprised between 0.25 and 4 microns, bounding said hot thermal enclosure internally; and an outer covering element, having sealing properties to water and to air, bounding said hot thermal enclosure externally; an upper duct forming a chimney directed upwards and provided with a closure member, connected to the upper part of said hot thermal enclosure; and a circulation duct opening into the dwelling connected at its upper part to said hot thermal enclosure, and at its lower part connected to a lower duct directed downwards and opening into the dwelling through at least one orifice;

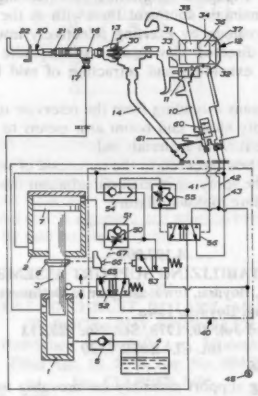
and a second thermal enclosure (cold enclosure) oriented on the side not exposed to the sun; an inner wall element bounding said cold thermal enclosure internally; and an outer covering element essentially constituted by an emittor material of very low thermal mass, behaving like an opaque body to solar radiation, emitting infrared radiation of wavelength comprised between 4 and 30 microns, said outer covering element bounding said cold thermal enclosure externally and having sealing properties to water and to air, a circulation duct connected at its upper part to said cold thermal enclosure and opening into the dwelling and provided with a closure member in the vicinity of its opening; and a lower duct directed downwards and opening into the dwelling through at least one orifice and connected to the lower part of said cold thermal enclosure.

4,197,994

SPRAYING DEVICE

Kurt H. Liedberg, Skara, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Jan. 23, 1978, Ser. No. 871,396
Claims priority, application Sweden, Nov. 3, 1977, 7712415
Int. Cl.[2] B05B 7/12
U.S. Cl. 239—61 **6 Claims**



1. A spray device for internal coating of hollow spray objects comprising:

a spray gun including a spray material valve (30), a servomotor (12) controlling the spray material valve, and a trigger means (11) for controlling the servomotor,

a piston pump (1) for feeding spray material to the spray gun,

the spray gun further including a connection (17) for controlled admission of pressure gas for atomization of the spray material, and

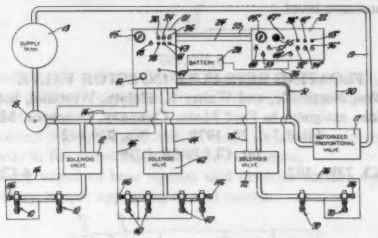
a control device (40) coupled to the spray gun for controlling the ejection of spray material from the spray gun, said control device (40) comprising adjusting means (5) for controlling the length of the stroke of said piston pump (1) to adjust the relation between the amounts of pressure gas and spray material supplied to the spray gun, thereby controlling the degree of atomization of the spray material emitted from the spray gun.

4,197,995

AGRICULTURAL SPRAYING ASSEMBLY

Robert J. Campbell, and Paul D. Gray, both of Cedar Rapids, Iowa, assignors to McCord Corporation, Detroit, Mich.

Filed Nov. 13, 1978, Ser. No. 960,486
Int. Cl.[2] E03B 7/07; G01F 13/00
U.S. Cl. 239—74 **22 Claims**



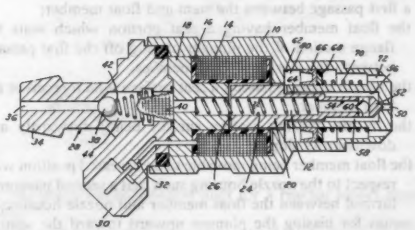
1. A spraying nozzle assembly comprising; a nozzle body having a nozzle passage through which liquid flows, said nozzle passage having an inlet end and an outlet end, a nozzle supported by said body at said outlet end of said nozzle passage, said body having a platform with the bottom of the platform being defined by a wall common to said nozzle passage, a transducer disposed on said platform adjacent said wall for responding to vibrations resulting from the flow of liquid through the nozzle, potting material covering the remainder of said platform to encapsulate said transducer, and electrical leads extending from said transducer through said potting material.

4,197,996

CONSTANT PRESSURE FUEL INJECTOR ASSEMBLY

Dante S. Giardini, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 7, 1978, Ser. No. 967,553
Int. Cl.[2] F02M 49/02
U.S. Cl. 239—87 **8 Claims**



1. A constant pressure fuel injector for use in the combustion chamber of an internal combustion engine comprising an outer housing having a control bore and a fuel outlet orifice, a fuel flow control valve axially movable to block or permit fuel flow through the orifice, an electromagnet assembly within the housing including a coil and an armature secured to the valve, spring means urging the armature and valve to a first position closing the orifice, the valve being movable to a second position opening the orifice upon energization of the coil, fuel

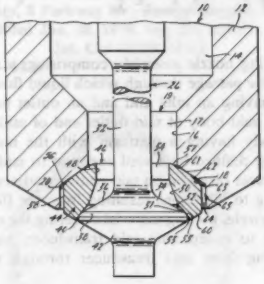
containing conduit means connected to the bore and having a one-way check valve in the conduit means opening to permit an inflow of fuel and closing to permit a buildup of pressure in the bore in the first closed position of the control valve, a fuel pressure charging chamber coaxially surrounding the bore, means connecting one end of the charging chamber to the bore and the opposite end to the combustion chamber pressure, a fluid pressure responsive means in the charging chamber movable by combustion chamber pressure to raise the fuel pressure on the bore side of the charging chamber to the combustion chamber pressure levels, and spring means in the charging chamber urging the fluid pressure means in a direction to increase fuel pressure to a charge level at which the fuel is injected through the orifice upon opening of the valve to its second position regardless of the increase in combustion chamber pressure level.

4,197,997

FLOATING RING FUEL INJECTOR VALVE

Hai Wu, Northville, and Walter K. Heintz, Westland, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 28, 1978, Ser. No. 929,142
Int. Cl.[2] B05B *1/08*
U.S. Cl. 239—102 **6 Claims**



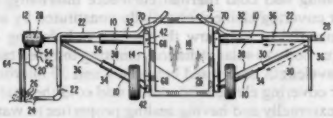
1. A fuel injection valve comprising:
a nozzle housing with a bore extending therethrough;
a plunger with an upper stem portion and a lower flange portion;
said flange portion radially extending outwardly and downwardly;
a float member having an aperture sized to receive the stem of the plunger;
a first passage between the stem and float member;
the float member having a seat portion which seats the flange section of the plunger closing off the first passage between the stem and float member;
the nozzle housing having a seat surface which receives the float member;
the nozzle housing seating surface being outwardly and downwardly sloped;
the float member being movable to an unseated position with respect to the nozzle housing such that a second passage is formed between the float member and nozzle housing;
means for biasing the plunger upward toward the seating surface of the nozzle housing to seat the flange portion of the plunger on the float member and to seat the float member on the nozzle housing closing off both passages;
the biasing means being sensitive to fluid pressure in the bore to allow the plunger to be lowered thereby allowing fuel to pass through both the first and second passages
the float member having a first surface sensitive to the fluid pressure exerted thereon biasing the float member away from its seated position with respect to the nozzle housing and a second surface sensitive to fluid pressure exerted thereon biasing the float member away from its seated position with respect to the plunger;
the float member having an equilibrium position between the respective seated positions on the nozzle housing and plunger where the pressures exerted on the respective first and second surfaces are in equilibrium and both passages and open allowing fluid to pass therethrough.

4,197,998

SELF-LEVELING BOOM-TYPE SPRAYING APPARATUS

John H. Jolly, Jr., 73 Montana Ave., Trenton, N.J. 08619

Filed Jul. 14, 1978, Ser. No. 924,784
Int. Cl.[2] B05B *3/18*
U.S. Cl. 239—184 **14 Claims**



1. A self-leveling boom-type spraying apparatus usable in applying materials adjacent longitudinally extending highway fixtures such as guard rails, said spraying apparatus being usable secured to a vehicle which includes a reservoir for holding a supply of the material to be applied, said spraying apparatus comprising:
(a) boom arm means being vertically and horizontally pivotally secured to the vehicle at the inner end thereof and including a spindle means at the outer end thereof, said boom arm means being axially extendable and retractable to vary the distance from the vehicle to said spindle means responsive to selectively inwardly and outwardly directed bias being exerted against said spindle means;
(b) mounting means secured to the vehicle for pivotally attaching said boom arm means to the vehicle;
(c) roller means pivotally mounted to said spindle means and adapted to engage a longitudinally extending highway fixture to maintain abutment therewith as the vehicle is moved therealong by exerting selectively inwardly and outwardly directed bias against said spindle means to cause axial extending and retracting of said boom arm means;
(d) conduit means extending from the reservoir of the vehicle outwardly along said boom arm means to provide a path for the flow of material; and
(e) a spraying head secured to the outer end of said conduit to control the spraying of material adjacent the longitudinally extending highway fixture.

4,197,999

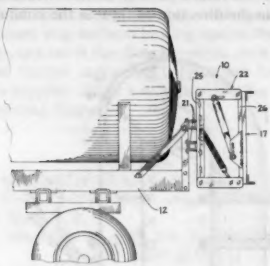
BOOM STABILIZING SUPPORT ASSEMBLY

Walter Lammers, Boyden, Iowa, assignor to Dethmers Manufacturing Company, Boyden, Iowa

Filed Jul. 10, 1978, Ser. No. 923,212
Int. Cl.[2] B05B *1/20*
U.S. Cl. 239—166 **5 Claims**

1. A stabilizing support assembly for movably mounting a horizontally extended boom means transversely of and to one end of a portable frame, said assembly comprising:
(a) a pair of transversely spaced apart parallel link systems each of which includes a first upright link fixed to the portable frame, a second upright link fixed to the boom means, and upper and lower links extended, respectively, between and interconnected to the upper and lower portions of said upright links,
(b) yieldable means interconnected with each of said link systems to provide each of said link systems with a floating support for said boom means, which supports act independently of one another,
(c) a shock absorbing means interconnected with and inde-

pendently associated with each of said link systems to dampen up and down oscillatory movement of said boom means, and



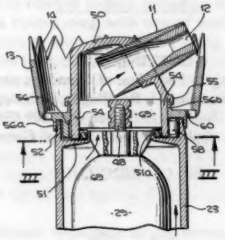
(d) torsion means fixed to and extended between said link systems for reducing relative horizontal tilting movement of opposite ends of said boom means.

4,198,000

STREAM ROTOR SPRINKLER WITH ROTATING DEFLECTORS

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marco, Calif.

Filed Apr. 4, 1977, Ser. No. 784,051
Int. Cl.[2] B05B 3/10
U.S. Cl. 239—222.13 **18 Claims**



1. A stream rotor sprinkler having a fluid dispensing nozzle assembly mounted on a rotor driven by a motor wherein the improvement comprises the provision of:

fluid stream deflectors rotatably mounted to said sprinkler about said nozzle assembly and adapted to be continuously driven by said nozzle assembly.

4,198,001

CONTROLLED THRUST, ROTARY, ADJUSTABLE TOPOGRAPHY SPRINKLER

Ricardo A. Rodriguez, 39 Suffolk Ave., Hialeah, Fla. 33010

Filed Apr. 10, 1978, Ser. No. 894,928
Int. Cl.[2] B05B 3/06
U.S. Cl. 239—227 **7 Claims**

1. A rotary irrigation device comprising,

a hollow cylindrical frame,

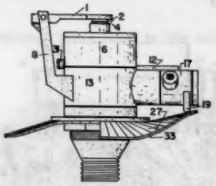
a hollow rotary unit coaxially placed on said frame whereby said frame acts as an axle shaft for said hollow rotary unit,

a nozzle positioning shaft radially attached to said hollow rotary unit,

a rotary nozzle rotatingly mounted on said nozzle positioning shaft unit,

said nozzle further comprising at least one irrigation jet orifice, oriented so that the central axis of said irrigation jet orifice is substantially non-parallel to and non-intersecting with the axis of rotation of the hollow cylindrical frame thereby causing a rotary torque on the hollow rotary unit and inducing a rotary motion,

said irrigation jet orifice further oriented so that the direction of flow is not along a radius of the axis of rotation of said rotary nozzle, thereby utilizing a small portion of the induced resultant force of the irrigation jet to produce a rotary torque on the rotary nozzle,



an adjustable contour surface mounted concentrically on said hollow cylindrical frame, for providing adjustable cam means,

a contact leg positioned on the outer surface of said rotary nozzle, for providing cam follower means,

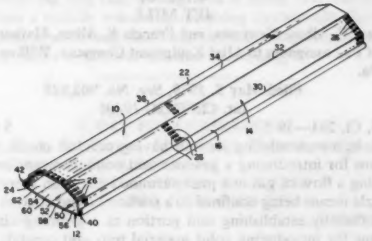
said leg urged to bear against said contour surface by the rotary torque appearing in said nozzle.

4,198,002

REACTOR DISTRIBUTION DUCT

Robert W. McClain, Dallas, Tex., assignor to Glitsch, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 765,717, Feb. 4, 1977, Pat. No. 4,123,008. This application Jun. 16, 1978, Ser. No. 916,377
The portion of the term of this patent subsequent to Oct. 31, 1995, has been disclaimed.
Int. Cl.[2] B01J 8/12
U.S. Cl. 239—568 **7 Claims**



1. An improved distribution duct for a reactor vessel comprising:

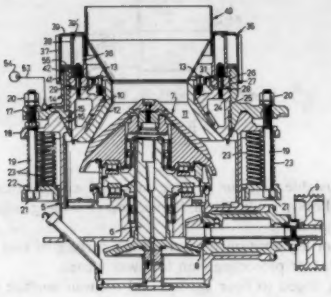
an elongated back plate having two back plate marginal side portions;

elongated front plate having a plurality of elongated perforated integral flat segments separated by elongated angular breaks, two front plate marginal side portions on the opposite sides of said front plate, said marginal side portions of said front plate each being crimped together with one of said marginal side portions of said back plate to form a seam, said flat segments and said back plate defining a flow chamber.

4,198,003
QUICK RELEASE FOR GYRATORY CRUSHER CONCAVE

Henry H. Polzin, Brookfield, and Joseph Batch, Milwaukee, both of Wis., assignors to Barber-Greene Company, Aurora, Ill.

Filed Mar. 19, 1979, Ser. No. 21,723
Int. Cl.² B02C *2/04*
U.S. Cl. 241—30 **7 Claims**



6. A method of releasing the bowl of a gyratory crusher for rotation relative to a frame member with which the bowl has a helically threaded connection, to provide for adjustment of a crushing gap between the bowl and a gyratory crushing head with which the bowl cooperates, said bowl being cooperable with rotation restraining means comprising a clamping ring which also has a helically threaded connection with said frame member, connecting means constraining the bowl and the clamping ring to rotate in unison but permitting limited axial motion between them, and means yieldingly biasing the bowl and the clamping ring axially towards one another with a clamping force that causes the clamping ring and said frame member to cooperate in normally confining the bowl against rotation, said method being characterized by:

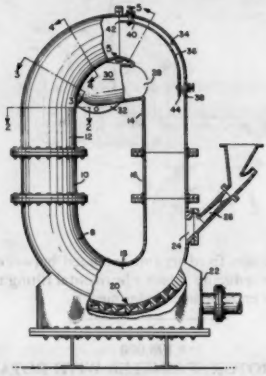
introducing air under pressure between the bowl and the clamping ring, to urge them axially apart with a force that overcomes said clamping force and thus releases them for rotation relative to said frame member.

4,198,004
JET MILL

James F. Albus, Newtown, and Francis E. Albus, Hatboro, both of Pa., assignors to Aljet Equipment Company, Willow Grove, Pa.

Filed May 5, 1978, Ser. No. 902,925
Int. Cl.² B02C *19/06*
U.S. Cl. 241—39 **9 Claims**

1. In a recirculating jet mill having conduit means, nozzle means for introducing a gas into said conduit means and producing a flow of gas in a predetermined direction therein, said nozzle means being confined to a portion of said conduit means and thereby establishing said portion as a grinding chamber, means for introducing solid material into said conduit means for treatment therein, and an outlet port communicating with the interior of said conduit means said outlet port being immediately preceded in the direction of flow by a curved portion thereof and said curved portion being preceded in the direction of flow by said grinding chamber, said outlet port being open toward the interior of the curve of said curved portion, the improvement comprising barrier means within said conduit means for confining larger particles of solid material being treated to a portion of the conduit means between the barrier means and the outermost part of the wall of the conduit means as the particles approach the location of said outlet port, said barrier means being at a location adjacent and spaced inwardly from the outermost part of the wall of said conduit means, said barrier means being elongated and curved, and extending in the direction of flow from a location within said curved portion preceding the outlet port at least to a location opposite said port, the curvature of said barrier means substantially conforming, in the direction of flow in the conduit means, to

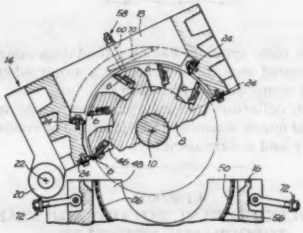


the curvature of the conduit means in said curved portion thereof, said conduit means being arranged in a closed loop and providing a path for the recirculation of solid particles in said loop from both sides of said barrier means to said grinding chamber and from said grinding chamber to both sides of said barrier means.

4,198,005
CUTTING MILL

Peter Eiff, Reutlingen, Fed. Rep. of Germany, assignor to Bruderhaus Maschinen GmbH, Reutlingen, Fed. Rep. of Germany

Filed Jun. 24, 1977, Ser. No. 809,655
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632330
Int. Cl.² B02C *13/04*
U.S. Cl. 241—73 **5 Claims**



1. A cutting mill comprising a housing having upper and lower parts forming a cutting chamber, a rotor having rotor cutting tools mounted thereon and rotatably mounted in said housing on an axis, stator cutting tools mounted in said upper housing part and operatively cooperating with said rotor blades, means pivotably mounting said upper and lower housing parts about an axis substantially parallel to said rotor axis, a sieve removably mounted in the lower housing part, bearing means arranged in said housing at each end of said rotor for rotatably supporting said rotor and means detachably connecting said bearing means with said upper housing part for selectively locating said rotor in either of said upper housing part or said lower housing part upon pivoting said upper and lower housing parts relatively of each other between a closed and an

open position, thereby permitting access to said sieve and rotor parts for maintenance, said bearing means includes a bearing flange arranged at each end of the rotor, spacing elements arranged adjacent each bearing flange of the rotor and forming lateral walls of said cutting chamber, said spacing elements including arcuate stop surfaces bearing against the sieve when said housing parts are in the closed position, each of said spacing elements further comprising upper and lower arcuate plates which together define a split circular ring supporting a respective bearing flange.

4,198,006

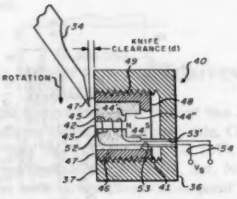
MAGNETIC CLEARANCE SENSOR

Norman F. Rolfe, Carlisle, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Oct. 30, 1978, Ser. No. 955,856

Int. Cl.[2] B02C *25/00*

U.S. Cl. 241—222 **5 Claims**



1. In a circuit for providing a clearance signal proportional to the clearance between opposing portions of proximal ferrous elements in relative motion including magnetic field generating means cooperating with one of said ferrous elements forming a portion thereof and generating a magnetic field emanating from the generating means and outwardly from the opposing portion of said one of said ferrous elements to be intercepted by said other ferrous element for providing an intercept signal, the improvement comprising:

circuit means cooperating with said field generating means and responsive to said intercept signal,

said circuit means includes a gating circuit responsive to said intercept signal and having at least one preset threshold, and

integrator means responsive to said intercept signal and said gating circuit during the time that the intercept signal exceeds the preset threshold for providing an integrated clearance signal related to the maximum flux through the generating means as said other element intercepts said field.

4,198,007

SHAFT FOR SIMULTANEOUSLY WINDING A PLURALITY OF ROLLS OF STRIP MATERIAL

Klaus Schoettle, Heidelberg; Peter Dobler, Ludwigshafen; Lothar Gliniorz, Frankenthal; Heinz Brombach, Oberkirch-Stadelhofen, and Dieter Wöppel, Waldsee, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,610

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2734978

Int. Cl.[2] B65H *19/04, 75/34, 17/02*

U.S. Cl. 242—56.9 **5 Claims**

1. A device for winding a plurality of rolls of strip material under uniform pressure which comprises:

a shaft;

a plurality of independently rotatable winding sleeves mounted on said shaft, each of said sleeves including a radial bore; and

springs frictionally connecting each of said sleeves to said shaft, said springs being helically wound about said shaft in a manner such that friction between the springs and the shaft tends to uncoil the springs as the shaft is rotated, one end of the springs being fixed in the radial bore of the sleeves.

4,198,008

REINFORCING SLEEVE FOR THE ENDS OF REEL CORES

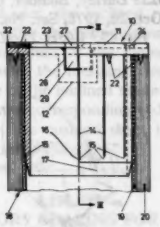
Walter Krautwald, Bad Bruckenau, Fed. Rep. of Germany, assignor to Firma Paul & Co. Inh. K. Kunert & Sohne, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,727

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1978, 7804704[U]

Int. Cl.[2] B65H *17/02*

U.S. Cl. 242—68.6 **4 Claims**



1. In a reinforcing sleeve formed of plastic or the like for the ends of hard paper reel cores or the like forming the support cores for wound goods such as paper, foils, textiles etc., the sleeve comprising a collar adapted to rest against the end faces of the reel core and a radial, hollow projection integrated with the collar and the outer periphery of the reinforcing sleeve, the projection being adapted to engage one end face of the reel core and to house a driver system, the improvement wherein:

a reinforcing ring (23) is integrated in collar (11) and comprises a radially extending receiving element (28) for the driver system, said receiving element being integrated in said radial projection (12) and reinforcing it.

4,198,009

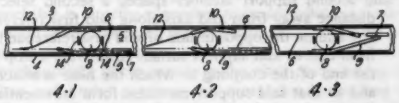
X-RAY FILM CASSETTE

George F. A. M. Turner, Ingatestone, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Jul. 18, 1978, Ser. No. 925,723

Int. Cl.[2] G03B *17/26;* G11B *1/00*

U.S. Cl. 242—71.7 **10 Claims**



1. A film sheet cassette comprising a frame to which is attached a substantially flat back plate and a substantially flat front plate and located therebetween a pressure plate for resiliently bearing against the said back plate when the cassette is in the closed position but raised from the back plate when the

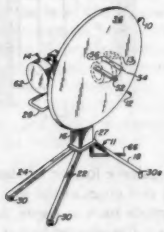
cassette is in the open position, there being present at one end of the frame, slot means for loading or unloading film into or out of the cassette, the said pressure plate having connected thereto along each side edge thereof at least one lifting tab, two push rods located one at each side of the frame for linear movement between a first position which corresponds to the cassette closed position and a second position which corresponds to the cassette open position, each push rod having associated therewith at least one round member which in the first position of the push rod rests on a flat end portion of a bellcrank member, each round member being located adjacent to a pressure plate lifting tab and a portion at least of the lifting tab being located over the portion of the bellcrank member on which the round member rests, whereby movement of the push rods from the first position to the second position causes the round member to move along the bellcrank members so causing the flat portion of the bellcrank member on which the round member rested to be pivoted upwards thus causing the lifting tab on the pressure plate to be raised so opening the cassette, together with light shielding means which prevents the ingress of light between the back plate and the pressure plate when the cassette is closed.

4,198,010

HOSE WINDING APPARATUS

Orville J. Knapp, 3255 Darley, Boulder, Colo. 80303

Filed Oct. 20, 1978, Ser. No. 952,995
Int. Cl.[2] B65H *75/40*
U.S. Cl. 242—86.2 **13 Claims**



1. Apparatus for coiling a hose assembly or the like including a generally cylindrical coupling with a sidewall and an end to which a hose is attached, said apparatus comprising:

a disc with a substantially flat surface portion mounted for rotation about a rotational axis;

first and second support members attached to and projecting away from said surface portion,

said first support member having a flat support surface spaced a first selected distance away from and arranged substantially parallel to a first reference line in the plane of said surface portion passing through said axis to provide a shelf-like support on which the sidewall of the coupling is positioned for support, said first support member projecting away from and substantially delimited in extent in one direction to a second reference line perpendicular to said first reference line in the plane of said surface portion and passing through said axis,

said second support member spaced a second selected distance away from said axis along said first reference line and on the opposite side of said first reference line from that of said support surface to provide a stop for the end of the coupling to which the hose is attached and so that said support members form an essentially right-angle seat for the sidewall and end of the coupling,

said first support member leading said second support member during the rotation of said disc,

whereby, when the coupling is placed on said support surface and the hose extends between said first and second support members, as soon as a pull is exerted on said hose due to the rotation of said disc, said coupling becomes seated in said seat and is held firmly in a right-angle supported position by said support members and said hose first wraps around said second support member, around said coupling and then around said first support member and is guided along said surface portion to form a flat coil; and

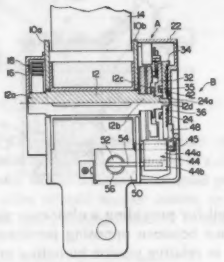
drive means for rotating said disc.

4,198,011

BELT TENSION ELIMINATOR FOR A SEAT BELT RETRACTOR

Ken Kamijo, and Yukio Fukunaga, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 4, 1978, Ser. No. 948,398
Claims priority, application Japan, Nov. 8, 1977, 52-134457
Int. Cl.[2] A62B *35/00;* **B65H** *75/48*
U.S. Cl. 242—107.7 **11 Claims**



1. A seat belt retractor having a belt tension eliminator comprising

a rotary shaft adapted to wind a webbing of the belt thereupon,

biasing means exerting on said rotary shaft a turning effort to windingly retract the webbing,

said rotary shaft being rotatable in the direction opposite to that of the retractive force by withdrawing movement of the webbing,

means producing a signal representative of fastening of the belt,

blocker means having an operative position for preventing rotation of said rotary shaft in the belt retracting direction against the action of said biasing means in response to said belt fastening signal and an inoperative position allowing free retraction of the webbing, and

means responsive to withdrawal movement of the belt and measuring the length of the withdrawn webbing for keeping the blocker means in the operative position when the length is below a predetermined degree, while bringing said blocker means into the inoperative position when said predetermined length is exceeded to reinstate the retractive force of said biasing means.

4,198,012

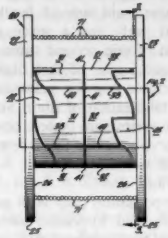
COLLAPSIBLE REEL

Roderic A. Esmonde, Macungie, Pa., and Frederick W. DeBellis, Piscataway, N.J., assignors to Bethlehem Fabricators, Inc., Bethlehem, Pa.

Filed Apr. 10, 1978, Ser. No. 894,552
Int. Cl.[2] B65H *75/22, 75/14*
U.S. Cl. 242—115 **15 Claims**

1. A collapsible reel having an expanded and a collapsed position and comprising a pair of end flanges spaced one from another, a segmented cylindrical drum extending between the flanges having some segments between the flanges fixed in position on the flanges and other segments between the flanges

movable relative to the flanges, and means connecting the movable segments to each other and to the fixed segments,



wherein the fixed and movable segments are shaped so the movable segments can fold relative to the fixed segments when the reel is collapsed.

4,198,013

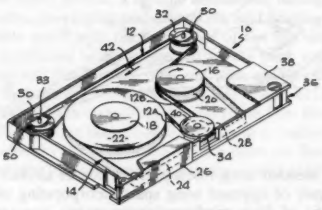
TENSIONING MEANS FOR BELT DRIVEN TAPE CASSETTE

Noah L. Anglin, and Robert H. Berry, both of San Jose, Calif., assignors to Verbatim Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 787,389, Apr. 14, 1977, Pat. No. 4,102,516. This application May 19, 1978, Ser. No. 907,883 The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.

Int. Cl.[2] **G03B** *1/04;* **G11B** *15/32, 23/04*

U.S. Cl. 242—192 **4 Claims**



1. In a belt driven magnetic tape cartridge which includes a housing, a pair of tape rolls rotatable with respect to said housing, and a driven belt bearing against the rolls of tape to move the tape, the improvement comprising:

a belt guide roller shaft disposed near the path of said belt and having opposite shaft ends with at least one shaft end held by said housing;

a belt guide roller having a hub portion mounted on said shaft and having a peripheral portion engaged with said belt to guide it; and

a resilient bowed washer having a hole which receives said shaft, said washer being partially compressed so it applies an axial force against an end of said belt roller, whereby to retard said belt roller to produce tension in said tape.

4,198,014

MAGNETIC TAPE MAGAZINE

Kengo Oishi, and Osamu Suzuki, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

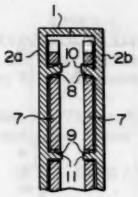
Continuation of Ser. No. 796,655, May 13, 1977, abandoned. This application Sep. 27, 1978, Ser. No. 946,458

Claims priority, application Japan, May 13, 1977, 52-63281

Int. Cl.[2] **G11B** *23/10*

U.S. Cl. 242—199 **5 Claims**

1. A magnetic tape magazine comprising a casing consisting of upper and lower halves coupled together in superimposed relation to form a space therebetween, a pair of cores rotatably mounted in the space, a magnetic tape wound in convolutions on the cores and a pair of cushion sheets interposed between the side faces of the tape convolutions and each of said halves of the casing, characterized in that the cushion sheet is held on each half of the casing by means of a plurality of holes formed through each cushion sheet and a plurality of rodshaped retaining members having a uniform cross-section over their length provided on the inner face of each half of the casing and inserted into said holes, said retaining members having an outer



diameter smaller than the inner diameter of the holes, at least one of the retaining members being permanently inclined with respect to its vertical axis, the inclined retaining members being made to incline after the cushion sheet is superimposed with the corresponding half of the casing with the holes thereof being mated with the retaining members of the half, whereby the side face of the inclined retaining member is put into engagement with the corresponding wall of the hole of the cushion sheet so that the cushion sheet is prevented from falling from the half of the casing.

4,198,015

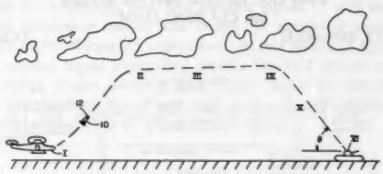
IDEAL TRAJECTORY SHAPING FOR ANTI-ARMOR MISSILES VIA TIME OPTIMAL CONTROLLER AUTOPILOT

Robert E. Yates; John P. Leonard, and Robert E. Alongi, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 30, 1978, Ser. No. 910,307

Int. Cl.[2] **F42B** *15/02*

U.S. Cl. 244—3.15 **4 Claims**



1. A missile guidance system for guiding a missile in a predetermined trajectory to impact with a target, said trajectory including initial pitchup, cruise, and attitude transition portions, said guidance system including: a seeker carried by said missile for tracking said target; said seeker having a yaw rate channel that is directly connected to an autopilot for controlling flight of the missile by proportional navigation in the yaw plane; a pitch programmer connected to said autopilot for controlling flight of the missile in the pitch plane during said pitchup and cruise portions; and means for controlling the missile in pitch during said attitude transition portion including, threshold detector and time optimal controller means connected for receiving pitch gimbal angle signals from said seeker and pitch attitude signals from missile dynamics and missile attitude and sensor of the missile for causing said time optimal controller to apply full control surface movement to missile control surface actuator means of the missile to cause

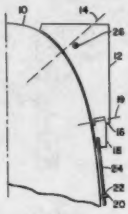
the missile to pitch down sharply toward the target under control of said time optimal controller.

4,198,016

FLOATING CANARD WITH GEARED TAB

Malcolm C. Wilson, Saratoga, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 12, 1978, Ser. No. 914,635
Int. Cl.[2] F42B *15/16, 19/01*
U.S. Cl. 244—3.21 **3 Claims**



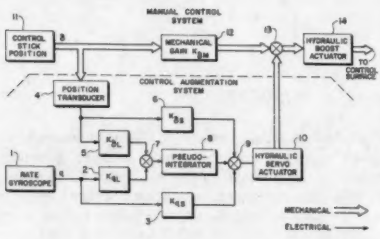
1. A missile stabilization system comprising:
(a) a canard pivotally connected to the nose of a missile about a pivot axis;
(b) a tab pivotally connected to the trailing edge of said canard;
(c) a stud having a hole therethrough fixedly connected to the body of said missile; and
(d) an inextendable rod fixedly connected at one end to said tab and slidingly connected through said hole of said stud at the other end such that when said canard pivots, said rod slides within said hole and causes said tab to pivot with respect to said canard.

4,198,017

CONTROL AUGMENTATION SYSTEM FOR FLIGHT VEHICLES

James B. Murray, New Brighton, Minn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 13, 1978, Ser. No. 951,201
Int. Cl.[2] B64C *13/04*
U.S. Cl. 244—83 G **2 Claims**



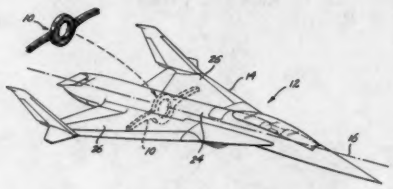
1. In a flight control system including a control stick, a mechanical gain means, a hydraulic boost actuator, and a control augmentation system including a rate gyroscope having an output, a first feedback path having a gain K_{qf} driven by said rate gyroscope output, a second feedback path having a gain K_{qs} driven by said rate gyroscope output, a control stick position transducer having an output, a first feedforward path having a gain $K_{\delta f}$ driven by said control stick position transducer output, a second feedforward path having a gain $K_{\delta s}$ driven by said control stick position transducer output, a first summing means for summing the outputs of said first feedback path and said first feedforward path, a pseudo-integrator means including an output driven by the output of said first summing means, a second summing means for summing the output of said psuedo-integrator, said second feedback path and said second feedforward path, and a servo actuator means for receiving the output of said second summing means for augmenting the mechanical gain of said flight vehicle whereby control of flight vehicle angular velocities in proportion to control input and stabilization of flight vehicle attitude is effected, an automatic series trim system comprising:
(a) a hydraulic servo actuator displacement sensor;
(b) a bi-directional switch;
(c) a trim motor, and
(d) a stability compensation path with gain K; wherein said system measures said hydraulic actuator displacement, and through said bi-directional switch operates said trim motor, whereby said trim motor adds to the output of said servo actuator causing control surface and vehicle motion.

4,198,018

BLENDED WING-FUSELAGE FRAME MADE OF FIBER REINFORCED RESIN COMPOSITES

Paul C. Brault, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 13, 1978, Ser. No. 886,138
Int. Cl.[2] B64C *1/06*
U.S. Cl. 244—119 **4 Claims**



2. In a blended wing-fuselage frame for an aircraft body in which a pair of opposed wing spars incorporating sine wave shear webs of fiber reinforced resin matrix composites are joined to a fuselage section incorporating a circumferentially oriented sine wave shear web, and in which chords of bundled, unidirectional fibers are provided along the opposed edges of the shear webs of each of said wing spars and along the circumferentially inner and outer edges of the shear web in said fuselage section for bearing tension and compression loads oriented along the edges of the respective webs, wherein the improvement in the manner of joining each of said wing spars to the fuselage section comprises:
means for extending in a continuous fashion said chords that are provided along the opposed edges of said shear webs of each of said wing spars around regions of curvature occurring where said wing spars join said fuselage section and thence into said fuselage section where said chords extend circumferentially around the edges of said fuselage shear web; and
transition structure means disposed in the areas at which said wing spars join said fuselage section for acting in compression, tension and shear to react forces that radiate radially from said chords in said regions of substantial curvature when said wing spars are subjected to bending loads; and wherein said transition structure means comprises first and second transition webs, one for each of said areas, each of said first and second transition webs having a pair of spaced parallel panels made of fiber reinforced resin matrix composites and a core sandwiched between said panels and bonded to the inwardly opposed surfaces of said panels, said first and second transition webs being dis-

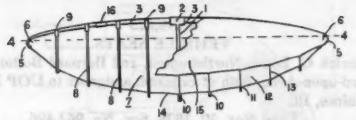
posed in said areas, on opposite sides of said fuselage section and, in edgewise relationship between said chords at said regions of substantial curvature so that a tension load on one of said chords creates radially oriented tension forces that are reacted by tension in an adjacent one of said transition webs, and so that a compression load on one of said chords causes radially oriented compression forces that are reacted by compression in an adjacent one of said transition webs.

4,198,019

FLEXIBLE AIRFRAME FLYING WING

Janos J. Linczmajer, c/o J. B. Elliott, 46 Perry St., New York, N.Y. 10014

Filed Apr. 5, 1978, Ser. No. 893,705
Claims priority, application Belgium, Oct. 18, 1977, 181827
Int. Cl.[2] B64C *3/14, 3/22*
U.S. Cl. 244—123 **5 Claims**



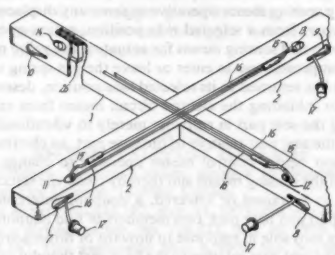
1. A flexible air frame flying wing having a substantially straight line center of pressure, comprising a rigid, non-deformable central rib, flexible spars connected to said central rib and disposed perpendicular thereto, a plurality of rigid, non-deformable floating ribs connected to said flexible spars, said central rib and floating ribs having an "S" shape of an autostable reflex profile, a flexible membrane, having top and bottom sides, enveloping said central rib, said floating ribs, and said flexible spars with the back edge of the top side of said flexible membrane being connected to the back ends of the central rib and the floating ribs, and with elastic cables connecting the back edge of the bottom side of the flexing membrane with the back ends of the central rib and the floating ribs in such manner as to bias the flexible spars in an arcuate configuration whereby the ends of the flexible spars are flexed aft up to the straight line corresponding to the center of pressure of the wing.

4,198,020

CONTAINER SUPPORT

George A. Walker; Leavenworth P. Sperry, both of Middlebury, and Robert B. Sutherland, Wilton, all of Conn., assignors to Waterbury Companies, Inc., Waterbury, Conn.

Filed Aug. 14, 1978, Ser. No. 933,527
Int. Cl.[2] A47G *23/02*
U.S. Cl. 248—154 **7 Claims**



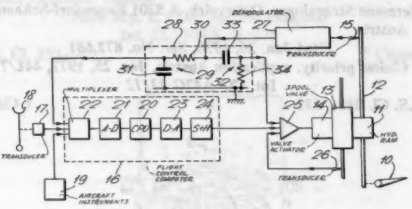
1. A retaining device for a receptacle comprising,
a plurality of demountable members forming a receptacle support,
each of said demountable members having a top surface and a plurality of side walls,
a set of adjacent openings formed in each of said members,
a plurality of tensioning means, and
a receptacle engaging element attached to each of said tensioning means,
each of said tensioning means located in each of said openings and each adjustably secured in said receptacle engaging elements adapted for receptacle retaining on said receptacle support.

4,198,021

CONTROL SYSTEMS

James F. Meredith, and Brian Williams, both of Cheltenham, England, assignors to Smiths Industries Limited, London, England

Filed Jul. 3, 1978, Ser. No. 921,524
Claims priority, application United Kingdom, Jul. 4, 1977, 27933/77
Int. Cl.[2] G05D *1/00*
U.S. Cl. 244—194 **12 Claims**



1. A control system for deriving an output signal for control of an operative function, the system comprising: first signal processing means; means for supplying an input signal to said first signal processing means; means for deriving a feedback signal indicative of the said operative function; means for supplying at least the lower-frequency components of said feedback signal to said first signal processing means, the said first signal processing means deriving an intermediate signal from said input signal and said components of the feedback signal by digital processing; second signal processing means; means for supplying said intermediate signal to said second signal processing means; and means for supplying predominantly higher-frequency components of said feedback signal to said second signal processing means, the said second signal processing means deriving said output signal by processing said intermediate signal and said predominantly higher-frequency components of said feedback signal.

4,198,022

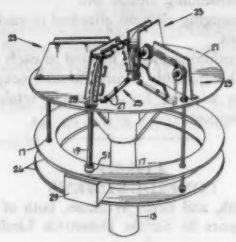
POWER CABLE GUIDE FOR HIGH-MAST LUMINAIRE RAISING AND LOWERING SYSTEM

Jackie E. Pletcher, Zanesville; Brady G. Johnson, and Richard G. Armstrong, both of Newark, all of Ohio, assignors to Johns-Manville Corporation, Denver, Colo.

Filed Mar. 10, 1978, Ser. No. 885,405
Int. Cl.[2] B42F *13/00*
U.S. Cl. 248—320 **6 Claims**

1. In a system for raising and lowering an electrical assembly along the exterior of a vertically extending highelevation pole including an elastomer-jacketed power cable extending in a first vertical path upwardly from said electrical assembly, through power cable guide means located at the top of said pole and to a second vertical path downwardly toward the base of said pole, the improvement in said power cable guide means comprising:
a series of individual rotable means mounted on horizontal axes along a generally arcuate path, for guiding the move-

ment of said power cable from said first vertical path to said second vertical path; and means adjacent the ends of



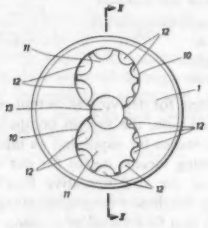
said individual rotatable means for limiting lateral movement of said cable.

4,198,023

STAND FOR CHRISTMAS TREES

Hermann Stranzinger, Osterreich, A 5301 Eugendorf-Schaming, Austria

Filed Jan. 26, 1978, Ser. No. 872,681
Claims priority, application Austria, Jan. 25, 1977, 441/77
Int. Cl.[2] A47G *33/12*
U.S. Cl. 248—523 **1 Claim**



1. A stand for a Christmas tree, comprising

(a) baseplate having a vertical axis, the baseplate defining

(1) two identical circular recesses, each of the circular recesses having a stationary vertical axis and the axes of the baseplate and the circular recesses defining a diametrical plane of the baseplate, and

(2) another circular recess of smaller diameter interconnecting the two circular recesses, the other circular recess having an axis coincident with the axis of the baseplate, and the recesses being stationary in the baseplate, and

(b) two identical discs disposed rotatably in the identical circular recesses for rotation about the respective stationary axes thereof,

(1) each disc defining a plurality of peripheral arcuate recesses of differing radii, and

(2) the radius of the other circular recess being equal to the largest radius of the arcuate recesses in the disc.

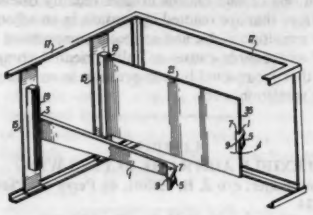
4,198,024

PRINTED CIRCUIT CARD HOLDER

Peter J. Cavanna, Coral Springs, Fla., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 10, 1977, Ser. No. 850,330
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—544 **5 Claims**

1. Planar sheet retention means comprising a retention arm, said retention arm having a base portion and a flexible latching portion, said latching portion having latching means provided thereon for engaging an edge of a planar sheet of material to be retained, said base portion having attachment means provided thereon for mounting said retention arm in a fixed manner to a



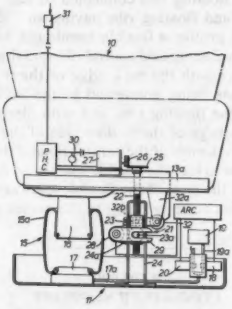
base support means, said base portion and said latching portion being movably and telescopingly joined by releasably adjustable fastening means attached thereto.

4,198,025

VEHICLE SEATS

Frederick G. Lowe, Northampton, and Bernard Bollons, Stratford-upon-Avon, both of England, assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 20, 1978, Ser. No. 962,496
Claims priority, application United Kingdom, Nov. 29, 1977, 49501/77
Int. Cl.[2] A47C *3/30*
U.S. Cl. 248—550 **8 Claims**



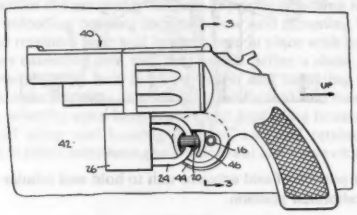
1. A vehicle seat comprising a base part, a suspension including a gas spring, a seat part mounted on the suspension for upward and downward resilient movement relative to the base part, a source of compressed gas, valve means connecting the interior of the gas spring selectively to the source of compressed gas and to atmosphere, and electric circuit means including sensing means operative to sense any displacement of the seat part from a selected ride position, means operable in response to said sensing means for actuating the valve means to allow compressed gas to enter or leave the gas spring until the seat part has returned to its selected ride position, desensitizing means for inhibiting the electric circuit means from raising or lowering the seat part in response merely to vibrational movement of the seat part relative to the base part, an electric motor driven seat height control means operable to change the response of the sensing means and thereby cause the selected ride position to be raised or lowered, a coupling interconnecting the seat part and base part, two members of said coupling being relatively movable in response to upward or downward movement of the seat part relative to the base part thereby to change the response of the sensing means, and wherein said seat height control means is operable to vary the relative static position of said coupling members and thereby vary the response of the sensing means, said desensitizing means comprising time delay

means operable to prevent activation of the valve means by said sensing means in response to any displacement of the seat part from the ride position which is maintained for less than a predetermined time period, and de-activation means arranged to render said time delay means inoperative during energisation of the said electric motor of the height control means.

4,198,026
FIREARM SECURITY DEVICE

Guy Capolupo, Riverdale, N.Y., assignor to Anthony Saraniero, Ozone Park, N.Y., a part interest

Filed Jan. 12, 1979, Ser. No. 2,993
Int. Cl.[2] E05B *73/00*
U.S. Cl. 248—552 **11 Claims**



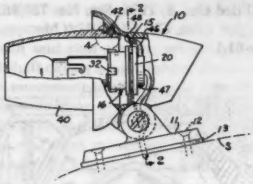
1. A firearm security device comprising
a generally plate-like base member;
a first elongated member secured to and extending from the base member;
a second elongated member secured to and extending from the base member generally parallel to and spaced from the first member;
a generally plate-like covering member having at least one opening therethrough sized to slidably receive the first and second members, the covering member being adapted to be positioned proximate to the base member with the first and second members extending therethrough;
the first and second members being spaced and sized and adapted to receive the trigger guard of a firearm thereabout and the trigger of the firearm therebetween, the first and second members being adapted to extend within the trigger guard at least one of the first and second members being adjacent the trigger guard to limit substantial movement of the device relative to the trigger guard, and at least one of the first and second members extending from the base member a distance sufficient to extend beyond the trigger guard; and
means associated with the member extending beyond the trigger guard for preventing the withdrawal of a firearm disposed with its trigger guard extending about the first and second members and its trigger located between the first and second members.

4,198,027
RESILIENT SUPPORT FOR LAMP

Karel Urbanek, Weston, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Canada

Division of Ser. No. 823,747, Aug. 11, 1977, Pat. No. 4,103,323, which is a division of Ser. No. 724,522, Sep. 20, 1976, Pat. No. 4,118,767. This application May 8, 1978, Ser. No. 903,759
Int. Cl.[2] A45D *19/04*
U.S. Cl. 248—634 **2 Claims**

1. For use in a lamp, a shock mounting member comprising:
a body of resilient material,
said body having spaced radially extending annular flanges defining a groove,
said body having an opening extending axially therethrough,

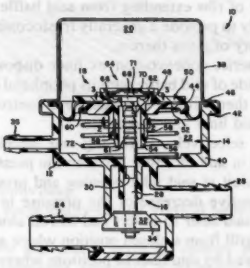


one of said flanges having circumferentially spaced integral protuberances extending axially through said groove toward the other flange.

4,198,028
DECELERATION VALVE

John E. Cook, Chatham, Canada, assignor to Canadian Fram Ltd., Chatham, Canada

Filed Sep. 1, 1978, Ser. No. 939,166
Int. Cl.[2] F16K *31/126*
U.S. Cl. 251—48 **7 Claims**



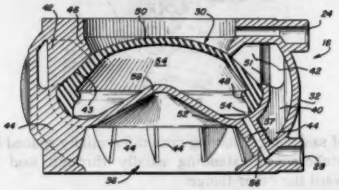
1. In a valve assembly, a housing defining a pair of chambers therewithin, a diaphragm assembly slidably disposed within one of said chambers and dividing the latter into a pair of sections between opposite sides of said diaphragm assembly and corresponding ends of said one chamber, means for communicating a vacuum signal into one of said sections, a pin, means carried by said diaphragm assembly for securing said pin to the latter for movement therewith, said pin projecting into the other chamber, and a valve member carried in said other chamber by said pin, said other chamber having an inlet and an outlet, said valve member controlling communication between said inlet and said outlet as a function of movement of said diaphragm assembly, said diaphragm assembly including an annular flexible member having an outer perimeter secured to said housing and an inner perimeter defining a central opening in said flexible diaphragm, a pair of diaphragm plates clamping the inner perimeter of said flexible member between said diaphragm plates, one of said plates including an axially projecting portion extending through the opening, the other diaphragm plate having an annular portion circumscribing the projecting portion of the one diaphragm plate, pin retaining means carried by said projecting portion for engaging said pin to secure the pin to the diaphragm assembly and connecting means carried by said projecting portion and said annular portion for securing the diaphragm plates to one another thereby clamping said inner perimeter of said diaphragm member between said plates, said connecting means including resilient legs carried by one of said plates and a groove in the other plate, said legs engaging said slot to secure said plates to one another.

4,198,029

THROTTLING CONTROL VALVE

Dwight N. Johnson, El Toro, Calif., assignor to Textron, Inc., Providence, R.I.

Filed Oct. 8, 1976, Ser. No. 730,962
Int. Cl.[2] F16K *31/126*
U.S. Cl. 251—61.1 **5 Claims**



1. A throttling valve for controlling fluid flow through a conduit comprising, in combination:

a body defining an inlet opening, a substantially coaxial outlet opening, and an interior cavity therebetween,

a baffle extending transversely across the central portion of the cavity defining an annular passageway between said baffle and the wall of said body for flow of fluid therethrough,

a plurality of ribs extending from said baffle to the wall of said body to provide a generally frustoconical grill having a plurality of ports therein,

an elastomeric, concavo-convex liner disposed on the upstream side of said baffle with its peripheral edge in sealing relation therewith so as to define a control chamber between said liner and said baffle,

means for selectively decreasing and increasing the fluid pressure in said chamber between the pressure existing in said conduit at said inlet opening and pressures therebelow, selective decrease of the pressure in said chamber causing said liner to invert and to roll along said frustoconical grill from a closed position where all of said ports are covered by said liner to positions where progressively greater areas of said ports are exposed, thereby permitting controlled and progressively increasing fluid flow through said ports and through said annular passageway, selective increase of the pressure in said chamber causing reverse movement of said liner,

said baffle having a central protuberance projecting toward said liner upon which said liner is draped during inversion of said liner.

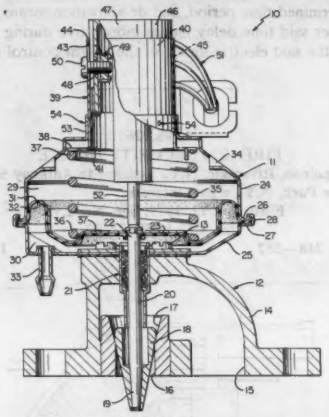
4,198,030

FLUID OPERATED VALVE POSITIONER

Byron L. Jackson, and Richard F. Caldwell, both of Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Jun. 8, 1977, Ser. No. 804,599
Int. Cl.[2] F16K *31/165, 37/00;* F02M *25/06*
U.S. Cl. 251—61.5 **10 Claims**

1. In a fluid operated valve positioner having an actuator unit provided with flexible diaphragm means carrying a main valve member to position the same relative to its main valve seat in a valve unit in relation to the actuated position of said diaphragm means in said actuator unit, said actuator unit having a range spring acting on one side of said diaphragm means and a fluid pressure chamber for receiving fluid pressure to act on the other side of said diaphragm means, said actuator unit carrying a position sensing means for sensing the position of said diaphragm means relative to said actuator unit, the improvement comprising a tubular sleeve adjustably carrying said sensing means and also having a part thereof acting against said range spring to calibrate the same, said actuator unit having a tubular portion telescopically receiving said tubular sleeve therein in an adjustable manner to calibrate said range spring and including means to fasten said tubular sleeve to said



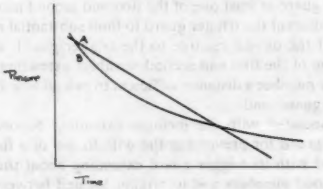
tubular portion of said actuator unit to hold said tubular sleeve in its calibrated position.

4,198,031

AUTOMATIC AIR DEFLATION REGULATOR FOR USE IN AN INSTRUMENT FOR MEASURING BLOOD PRESSURE

Frederick D. Ezekiel, Lexington, and Sol Aisenberg, Natick, both of Mass., assignors to Gulf & Western Industries, Inc., New York, N.Y.

Filed Apr. 17, 1978, Ser. No. 896,968
Int. Cl.[2] F16K *24/00*
U.S. Cl. 251—117 **13 Claims**



1. An automatic air pressure deflation regulator for use in a sphygmomanometer, said regulator comprising a housing having an air flow channel extending through the longitudinal extent thereof and at least one air deflation port extending outwardly from said channel, said at least one air deflation port including a floatably mounted, deformable diaphragm of substantially uniform thickness supported only on its outer edges by a pair of O-rings on either side of said diaphragm and having an aperture extending through the thickness thereof, said diaphragm adapted to axially deform along its entire longitudinal extent according to the air pressure applied against it from said channel in order to change the size and shape of said aperture as a function of the air pressure to produce a constant air deflation rate therethrough.

4,198,032
BOTTOM OPERABLE TANK CAR LADING VALVE ASSEMBLY WHICH DOES NOT REQUIRE A SKID

David P. Hillstead; Robert W. Randolph, and Gunter R. Behle, all of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

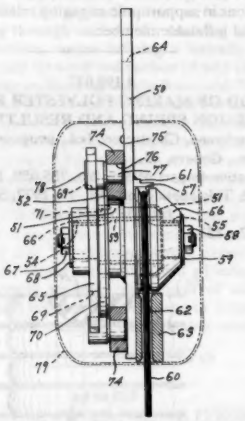
Filed Feb. 21, 1978, Ser. No. 879,352
Int. Cl.[2] F16K 27/03, 1/48
U.S. Cl. 251—144 10 Claims

1. A bottom operable tank car lading valve assembly comprising: a tank car mounting flange attached to an opening in the tank bottom; a valve body including a valve seat located radially inwardly from said mounting flange; a valve closure movable between open and closed positions relative to said seat; said mounting flange further including a slot located in the lower internal surface thereof; a retaining ring located within said slot; said retaining ring engaging at least a portion of said valve body to maintain and support the valve body in place within the mounting flange; a depending housing including an unloading opening located below said mounting flange and said retaining ring; said housing held in place with housing fasteners extending into said ring which define a shear plane; said retaining ring held in place within said mounting flange with retainer fasteners extending vertically into said mounting flange; whereby upon hard impact said depending housing will shear off along said housing fasteners and said retainer will remain in place maintaining said valve seat and valve closure in place.

4,198,033
SYSTEM FOR TRANSMITTING AND/OR CONTROLLING ROTARY MOTION

Philippe de la Messuziere, 30 Zircon Ct., Willowdale, Ontario, Canada (M2H 2A1), and Jacques Dulondel, 1081 Saint-Viateur St., Outremont, Quebec, Canada (H2V 3W2)

Filed Sep. 14, 1977, Ser. No. 833,282
Int. Cl.[2] B66D 5/04
U.S. Cl. 254—159 3 Claims

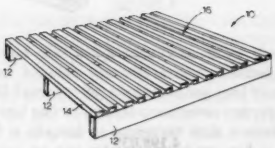


1. An apparatus for lowering a load comprising a support, a shaft journalled in said support, a pulley secured to said support, a cable trained on said pulley and rotation said pulley and shaft under a load attached to said cable and being lowered, and means for retarding rotation of said shaft under the action of said load, said retarding means comprising a cam secured to said support, circumscribing said shaft and defining a continuous undulated cam surface substantially parallel to the rotational axis of said shaft and having a minimum of three first portions radially equally spaced from said rotational axis and separated by a minimum of three second portions radially equally spaced from said rotational axis, said first portions being closer to said rotational axis than said second portions, each first portion being diametrically opposed to one of said second portions with respect to said rotational axis, a weight driven in rotation by said shaft and capable of radial movement relative to said shaft and carrying two cam follower portions diametrically opposed relative to said shaft and in continuous engagement with said cam surface whereby rotation of said weight by said shaft causes a minimum of three cycles of radial back and forth movement of said weight relative to said shaft for each complete rotation of said shaft, the force required to produce acceleration and deceleration of said weight during said radial back and forth movement being sufficient to cause significant retarding of said shaft rotation.

4,198,034
FENCE STRUCTURE

Ferdinand M. Svirklys, Toronto, Canada, assignor to Extrados Company Limited, Toronto, Canada

Division of Ser. No. 710,236, Jul. 30, 1976, Pat. No. 4,077,334, and a continuation-in-part of Ser. No. 579,410, May 21, 1975, Pat. No. 3,971,326. This application Dec. 20, 1977, Ser. No. 862,333
Int. Cl.[2] E04H 17/14
U.S. Cl. 256—65 18 Claims



1. A fence comprising:
at least two horizontally-spaced vertical aluminum support posts,
at least upper and lower vertically-spaced aluminum rail members extending generally horizontally between and secured to said posts, and
a plurality of vertically-extending aluminum plank members horizontally-spaced from each other and contacting and extending at least between said upper and lower rail members,
snap fit means releasably interconnecting said rail members with each of said plank members at the intersections thereof,
at each said intersection, said snap-fit means including a first part integral with said rail member and a second part integral with said plank member, and
stop means located at each said intersection and preventing movement of each of said plurality of plank members longitudinally thereof and transverse to said rail members while normally permitting movement of said plank members out of contact with said rail members upon release of said snap-fit means to allow disassembly of the fence,
said stop means at each said intersection including cooperating elements integral with said plank member and integral with said rail member,
each of said rail members including a horizontally-extending planar portion and skirt portions integral with said planar portion depending therefrom,
each of said plank members including first and second coplanar portions spaced from said rail members at said intersections and a third planar portion engaging one of said skirt portions of said rail member at their intersection and extending in parallel relation to said first and second coplanar portions,
first and second wall portions integrally joining one side of said third planar portion to one side of one of said copla-

nar portions and the other side of said third planar portion to one side of the other of said coplanar portions, whereby said wall portions and said third planar portion define a first channel opening in a direction away from said rail members, and first and second parallel skirt portions integrally joined to the other sides of said coplanar portions and extending a distance substantially equal to the height of said wall portions, whereby said skirt portions and wall portions define second and third channels with said coplanar portions opening towards said rail members, and

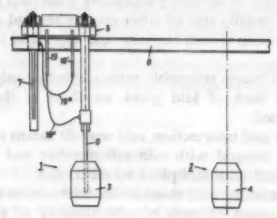
said snap fit means at each said intersection comprising first and second protrusions extending horizontally from said rail member and each including a shoulder projecting in opposite directions generally parallel to and spaced from said skirt portion to define an undercut therewith, said first and second protrusions constituting said first part of said snap fit means integral with said rail members and first and second integral projections formed at the free edge of said skirt portions of said plank members and projecting towards each other and into said undercuts at said intersections, said integral projections constituting said second part of said snap fit means integral with said plank members, the extremities of said shoulders being spaced apart substantially the distance between said skirt portions of said plank members.

4,198,035

BLOWING LANCE MEDIA-SUPPLY ARRANGEMENT

Hellmuth Smejkal, Linz, and Ernst Zajicek, Ottensheim, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Sep. 5, 1978, Ser. No. 939,680
Claims priority, application Austria, Oct. 11, 1977, 7244/77
Int. Cl.[2] C21C 7/00
U.S. Cl. 266—226 **8 Claims**



1. In a blowing lance media-supply arrangement for at least one metallurgical vessel of the type including a carrying car displaceable into and out of at least one blowing position along its path of movement, and at least one blowing lance arranged on said carrying car, the improvement comprising:

media supply conduit means;

a stationary joining piece connected to said media-supply conduit means and arranged along said path of said carrying car at its at least one blowing position; and

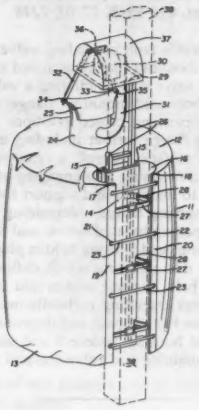
a joining counter piece mounted to and movable with said carrying car and being connected to said blowing lance by a pipe conduit means, said counter joining piece corresponding to said joining piece such that they are connectable together in such a manner as to establish a conduit from said media-supply conduit means when said car is in the blowing position.

4,198,036

INFLATABLE PROTECTIVE CUSHION

Larry O'Neal, 4953 Timbercrest Dr., Canfield, Ohio 44406

Filed Nov. 10, 1977, Ser. No. 850,299
Int. Cl.[2] F16F 9/04
U.S. Cl. 267—140 **9 Claims**



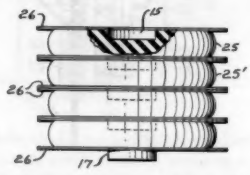
1. An inflatable protective cushion for positioning around a ski lift support pole comprising a completely flexible hollow inflatable member having a single outer wall and upper and lower end portions, means for attaching the same to said support pole, said means including oppositely disposed portions of said inflatable member outer wall arranged to extend between said upper and lower portions for partial engagement about said support pole and fasteners holding said oppositely disposed portions in support pole engaging relation and means for inflating said inflatable member.

4,198,037

METHOD OF MAKING POLYESTER ELASTOMER COMPRESSION SPRING AND RESULTING PRODUCT

David G. Anderson, Chesterton, Ind., assignor to Miner Enterprises, Inc., Geneva, Ill.

Continuation-in-part of Ser. No. 755,050, Dec. 28, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 861,827
Int. Cl.[2] B61G 9/06
U.S. Cl. 267—153 **15 Claims**



14. A method of making a compression unit comprising an elastomeric spring having two sides, and two plates each having a face abutting and bonded to a respective one of said sides, said method comprising the steps of:

forming a block of an annealed copolyester polymer elastomer of a given length between said sides;

forming said plates with surface incongruities at said face thereof which incongruities define steps angularly aligned with respect to said face;

locating said plates on respective sides of said block with

said face of each plate against said respective side to thereby form an assembly;

applying to each of said plates a force in the direction of the other of the plates sufficient to compress said block to an extent of at least about fifty percent of said given length and to thereby cause the copolyester polymer elastomer to flow about said incongruities to form a mechanical bond between the elastomer and said plates; and

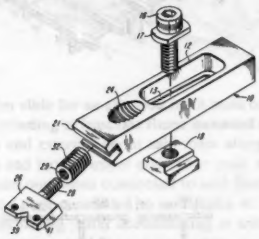
removing said force from said plates.

4,198,038

DEVICE FOR CLAMPING A WORKPIECE TO A SUPPORTING SURFACE

Wilfred C. Quinter, Dayton, Ohio, assignor to T. E. Co., Englewood, Ohio

Filed Aug. 21, 1978, Ser. No. 935,462
Int. Cl.[2] B23Q *3/02*
U.S. Cl. 269—137 **6 Claims**



1. A clamp device adapted for holding a workpiece on a supporting surface, said device comprising an elongated single-piece clamp body having a top surface, a forward end surface and a bottom surface for engaging the supporting surface, means defining a longitudinally extending slot within said clamp body between said top and bottom surfaces, a threaded fastener extending through said slot for securing said body to the supporting surface, means defining a laterally extending cross slot within said forward end surface of said clamp body, said cross slot being inclined upwardly from said forward end surface and forming an acute angle with said bottom surface, a generally flat workpiece gripping element supported within said cross slot for sliding movement and projecting downwardly from said forward end surface at an acute angle relative to said bottom surface, means defining an inclined threaded hole within said body and extending upwardly from said laterally extending slot in alignment therewith to said top surface of said clamp between said forward end surface and said longitudinally extending slot, an adjusting screw extending within said threaded hole, means connecting said adjusting screw to said gripping element to effect movement of said gripping element within said cross slot in response to rotation of said screw, and means for retaining said gripping element within said cross slot.

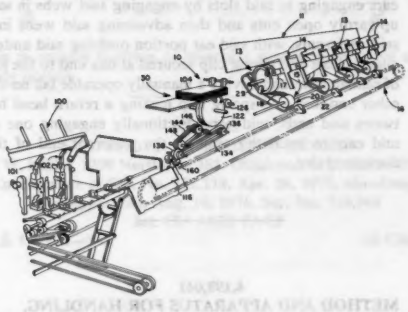
4,198,039

SIGNATURE COVER FOLDER FEEDER

Robert A. Bryson, Easton, Pa., and Robert M. Silva, Milford, N.J., assignors to Harris Corporation, Cleveland, Ohio

Filed Jan. 16, 1978, Ser. No. 869,534
Int. Cl.[2] B65H *39/02*
U.S. Cl. 270—54 **9 Claims**

1. A sheet folding apparatus comprising a sheet conveying means and means for scoring a sheet along a line while being conveyed by said conveying means, a pair of superimposed endless continuous conveyor belts, each of said belts having a belt reach extending along a path to be traversed by a sheet, said belts being located to receive said sheet from said conveying means after scoring, said belts having sheet engaging surfaces, respectively, and being arranged for engaging opposite sides of said sheet to convey said sheet along said path, one of said belts having an inwardly extending notch in the sheet engaging surface thereof, and the other of said belts having a projecting portion on the sheet engaging surface thereof projecting into said notch along said path whereby a sheet interposed between said belts is folded along said score line during movement along said path, said sheet conveying means comprising a gripper drum for gripping a sheet in a hopper and for conveying a sheet therefrom, said gripper drum including a disc mounted on the axis of the gripper drum for rotation



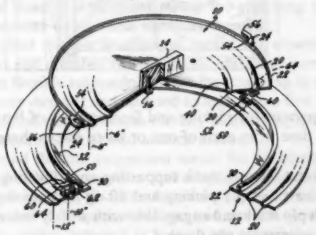
therewith, said disc being adjustable along the axis of the gripper drum between first and second positions, in said first position said drum having a male scoring land located in alignment with said pair of endless continuous conveyor belts, and which land is adapted to cooperate with a scoring wheel to effect scoring on one side of the sheet, and in said second position, said drum having resilient material located in alignment with said endless continuous conveyor belts and adapted to cooperate with a scoring wheel having a male land for scoring said sheet on the other side thereof.

4,198,040

ADJUSTABLE LID

Julius R. Colasent, 123 Farland Pl., Escondido, Calif. 92025

Filed Dec. 1, 1978, Ser. No. 965,700
Int. Cl.[2] B65D *41/06*; A47J *36/06*
U.S. Cl. 220—254 **2 Claims**



1. An adjustable lid for a cooking utensil or the like, comprising:

(a) a circular central member and at least one annulus having an inner diameter close to the outer diameter of said central member, together to form a cover for such utensil,

(b) securing means between said central member and said annulus including a plurality of slots in one and a plurality of ears on the other fitting in said slots, said ears locking in said slots by a turning movement of said annulus relative to said central member to hold said annulus and said central member generally coplanar,

(c) said central member being generally planar and said annulus being generally planar and said annulus having an upright return bend near its inner margin and a ledge leading from said return bend to form a seat for the peripheral edge of said central member in said annulus, and

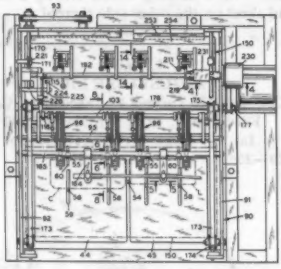
(d) said slots being formed by upwardly open cuts in said return bend that terminate in undercuts at one end and the outer edge of said central member terminating in an upright flange and said ears being formed as continuations of said flange that are cut and struck out with an inboard web and an ear portion leading tangentially from said web, said ears engaging in said slots by engaging said webs in said upwardly open cuts and then advancing said webs into said undercuts, with said ear portion outlying said undercuts, at least one spring clip secured at one end to the top of said annulus and having a manually operable tab on the other end and said spring clip making a return bend between said ends, said bend frictionally engaging one of said ears to latch the same in the undercut end of the associated slot.

4,198,041

METHOD AND APPARATUS FOR HANDLING, POSITIONING AND ASSEMBLING FABRIC PLIES

Francis H. Hughes, North Troy; Kenneth O. Morton, Troy; Roger LeMere, Petersburg, and Fred A. Brown, III, Ballston Spa, all of N.Y., assignors to Cluett, Peabody & Co., Inc., New York, N.Y.

Division of Ser. No. 689,995, May 26, 1976. This application Dec. 8, 1977, Ser. No. 858,915
Int. Cl.[2] B65H 3/30
U.S. Cl. 271—9 **4 Claims**



1. Apparatus for picking and feeding plies of limp material one at a time from each of one or more stacks thereof, which comprises

(a) at least one ply stack supporting and elevating platform,

(b) at least two ply picking and lifting units arranged above each ply stack and engageable with widely spaced areas of the uppermost ply thereof,

(c) each of said picking and lifting units comprising a lifting arm, a ply engageable wheel carried by said arm, and a ply engaging shoe engageable with the uppermost ply of a stack,

(d) means pivotally mounting the lifting arms of each picking unit for movement of the wheel and shoe toward and away from the ply stack, and

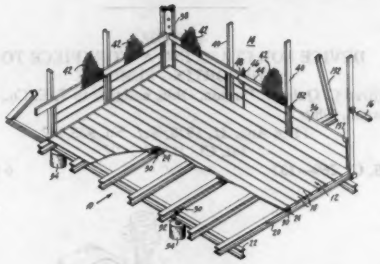
(e) actuating means for said picking units including a common actuator for all of said picking units and a plurality of individual, independently adjustable resilient connecting means interposed between said common actuator and said individual picking units.

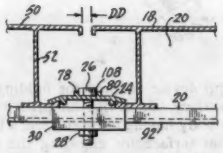
4,198,042

PADDLE TENNIS COURT AND DECK CONSTRUCTION

George E. Olson, 28 Malapardis Rd., Morris Plains, N.J. 07950

Filed Dec. 16, 1977, Ser. No. 861,307
Int. Cl.[2] E04B 5/43
U.S. Cl. 272—3 **7 Claims**





1. A deck apparatus comprising:

a plurality of first members having an upper deck surface, a pair of leg sections attached to said upper deck surface and a pair of outwardly facing foot sections attached to said leg sections respectively, said foot sections including a wedge-shaped edge thereon;

a double clamp means including a section thereof for cradling and clamping the wedge-shaped edges of two adjacent first members thereby automatically creating a gap of predetermined dimensions between the upper surfaces of said two adjacent first members, said double clamp means including a body section having at least one aperture therethrough, a first and a second edge engaging lip section attached to said body section and located on opposite sides thereof, said first and said second edge engaging lip sections being inclined with respect to said body section, and a first and a second rib section located respectively adjacent to said first and said second edge engaging lip sections and forming with respect to said first and said second edge engaging lip sections a pocket for engaging the wedge-shaped edges of said two adjacent first members respectively;

threaded means receivable in said aperture in the body section of said double clamp means; and,

a plurality of second members running approximately perpendicular to said first members and located under said first members, said second members being attached to said first members by said threaded means and said double clamp means,

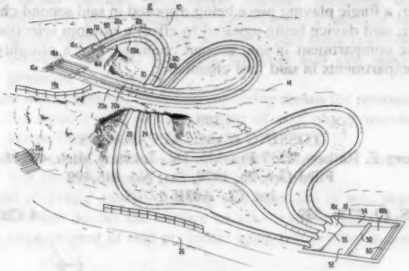
wherein said threaded means is accessible by a tightening tool through said gap between the upper deck surfaces of said adjacent first members.

4,198,043

WATER SLIDE WITH MODULAR, SECTIONAL FLUME CONSTRUCTION

Larry C. Timbes, Myrtle Beach, and Julian H. Price, Florence, both of S.C., assignors to Plexa Incorporated, Florence, S.C.

Filed Jun. 6, 1978, Ser. No. 913,185
Int. Cl.[2] A63G 21/18
U.S. Cl. 272—56.5 R 19 Claims



1. In a water slide for an elevated earth mass or the like, said water slide including at least one flume mounted on the surface of said mass and curving about said mass along an extended descent path and having upper and lower ends, a starting pool for said at least one flume connected to said flume at its upper end, a landing pool connected to said flume at its lower end, means for circulating water accumulating in said landing pool back to said starting pool for gravity passage over said at least one flume back to said landing pool, the improvement wherein:

said at least one flume is formed of a plurality of end connected and end sealed modular molded plastic flume sections,

each section being generally concave upwardly and being generally semi-circular in transverse cross-section and terminating along opposed edges in integral upwardly convex hand rails,

said sections comprising at least straight sections with opposed sidewalls of common height and with straight hand rails at common height, curved sections having radially inner and outer walls with said radially outer walls being higher than said radially inner walls with the hand rail of each curved section for the radially outer wall being higher than that of the radially inner wall, and transition sections between the straight sections and the curved sections and between curved sections of opposite throw, said transition sections being straight and having one of the hand rails inclined upwardly in the direction from one end thereof to the opposite end for connection to a radially outer wall hand rail of a given curved section.

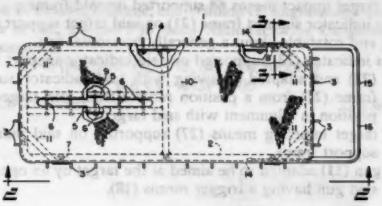
4,198,044

EXERCISE BOARD

Vaino A. Holappa, 2739 Noble Rd., Cleveland Heights, Ohio 44121

Filed Oct. 20, 1978, Ser. No. 953,092
Int. Cl.[2] A63B 21/00
U.S. Cl. 272—135 8 Claims

1. An exercise board comprising a rectangular body support having laterally projecting eyes along opposite sides and ends thereof and having a ladder-like structure extending longitudinally between the legs of a person on said support with rungs thereacross; and an elastically stretchable belt having hooks at its ends for selective detachable engagement with said eyes and rungs to overlie a desired portion of a person's body on said support so that movement of such portion stretches said belt



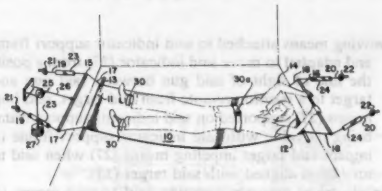
thus to require exertion of muscular power to so move said body portion.

4,198,045

SUSPENDED EXERCISING DEVICE

G. W. Miller, 1309 Northwest 101, Oklahoma City, Okla. 73114

Continuation of Ser. No. 572,114, Apr. 28, 1975, abandoned.
This application Aug. 16, 1976, Ser. No. 714,969
Int. Cl.[2] A63B 21/02
U.S. Cl. 272—142 16 Claims



1. An exercising apparatus comprising:

(a) an elongated body supporting member having a first end edge and a second end edge;

(b) a first rigid elongated end member extending along and affixed to said first end edge of said body supporting member;

(c) a second rigid elongated end member extending along and affixed to said second end edge of said body supporting member;

(d) a first rigid elongated stabilizer member;

(e) a second rigid elongated stabilizer member;

(f) a first flexible attachment means for attaching said first end member to said first stabilizer member;

(g) a second flexible attachment means for attaching said second end member to said second stabilizer member;

(h) a first flexible suspension means for attaching to said first stabilizer member and adapted to attach to a first substantially fixed anchor means thereby suspending one end of said apparatus from said anchor means;

(i) a second flexible suspension means for attaching to said second stabilizer member and adapted to attach to a second substantially fixed anchor means thereby suspending one end of said apparatus from said anchor means; and

(j) elastic means disposed in at least one of said first suspension means and said second suspension means whereby said suspension means can be elongated and contracted.

4,198,046

TARGET GAME WITH MOVING INDICATOR

Raymond J. Lohr, 5043 Sterrettania Rd., Erie, Pa. 16506

Filed Feb. 1, 1978, Ser. No. 874,228
Int. Cl.[2] A63B 71/04; F41F 27/00
U.S. Cl. 273—315 20 Claims

1. A target game made up of a gun and a target support frame (12),

a target (13) supported on said target support frame (12)

movable from an erect position to a knocked-down position,

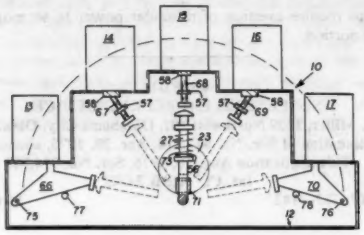
a target impact means **68** supported on said frame,

an indicator support frame **(21)** on said target support frame and rotatable about a generally horizontal axis,

an indicator **(23)** supported on said indicator support frame **(21)** and adapted to swing with said indicator support frame **(21)** from a position remote from said target to a position in alignment with said target,

a target impelling means **(27)** supported on said indicator support frame,

a gun **(11)** adapted to be aimed at the target by an operator, said gun having a trigger means **(18)**,



moving means attached to said indicator support frame **(21)** and adapted to move said indicator **(27)** from a position in the line of sight of said gun between said gun and said target to a position remote from said target, said impelling means **(27)** supported on said indicator support frame **(21)** being movable with said indicator support frame **(21)** to impact said target impelling means **(27)** when said indicator **(28)** is aligned with said target **(13)**,

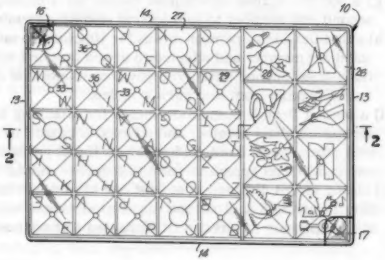
an electrical means connecting said trigger means **(19)** to said impelling means for impacting and moving said target impelling means **(27)** when said trigger is actuated and said target impelling means is aligned with said impact means at the proper time whereby said target is knocked over.

4,198,047

MULTI COMPARTMENT GAME BOARD

Henry J. Scott, and Lenore Scott, both of New York, N.Y., assignors to Anjar, Inc., New York, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,475
Int. Cl.[2] **A63F** *7/04*
U.S. Cl. 273—1 R **1 Claim**



1. A composite game board comprising: a planar base wall, a peripheral wall surrounding said base wall, a septum interconnecting a pair of mutually spaced portions of said peripheral wall, thereby forming first and second chambers, an upper wall supported by said peripheral wall and enclosing said chambers, each of said chambers being subdivided to form a plurality of compartments, the height of which is substantially less than the height of said chambers, so as to allow access from above; said second chamber having a transparent intermediate lower wall defining an interstice with said base wall, said peripheral wall defining a slot communicating with said interstice; a planar indicia card selectively insertable through said slot into said interstice, to underlie said second chamber, and provide a plurality of pictorial indicia, each indicia underlying a compartment in said second chamber; the compartments of said first chamber being identified by an alphabetic letter; a plurality of movable playing pieces disposed in said first chamber, a single playing piece being disposed in said second chamber; said device being agitated to effect a random selection of one compartment in said second chamber, and a plurality of compartments in said first chamber.

4,198,048

TOSSING GAME APPARATUS

Larry F. Rathert, 1527 Franklin Dr., Inkster, Mich. 48141

Filed Oct. 26, 1977, Ser. No. 845,499
Int. Cl.[2] **A63B** *67/06*
U.S. Cl. 273—339 **4 Claims**

1. A game apparatus comprising:

at least one target and,

at least one ring adapted to be thrown at the target from a throwing area,

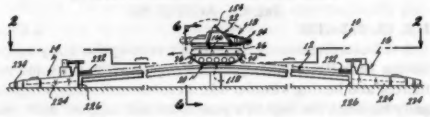
wherein said target further comprises a base, means for attaching said base to a playing area, a first peg secured to said base and extending substantially vertically upwardly therefrom and a second peg secured at one end to said base at a position further spaced from said throwing area than said first peg, said peg being angled toward said first peg and wherein said first peg extends above the second peg so that the first peg partially blocks the entry of the ring to the second peg, a third and a fourth peg mounted to said base so that said third and fourth pegs extend generally vertically upwardly from the base, said third and fourth pegs being equidistantly spaced from said first and second pegs but on opposite sides of a center line extending between said first and second pegs, and wherein the other end of the second peg extends at least to a center line extending between said third and fourth pegs.

4,198,049

GAME WITH REVERSIBLE, SELF-PROPELLED TARGET OBJECT

Toshiaki Kurita, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Dec. 21, 1978, Ser. No. 971,939
Claims priority, application Japan, Jun. 13, 1978, 53-71636
Int. Cl.[2] **A63B** *63/00;* **A63H** *29/08*
U.S. Cl. 273—119 A **13 Claims**



1. A toy which comprises:

a track, said track having a first end and a second end;

two projectile launchers, one projectile launcher integrally mating with said first end of said track, the second projectile launcher integrally mating with said second end of said track;

at least one projectile, each of said first or said second projectile launchers being capable of ejecting said projectile across said track;

an object member, said object member including self-propelled motor means for independently moving said object member across the surface of said track reversibly between said first projectile launcher and said second projectile launcher;

said object member including reversing means for reversing the direction of said movement of said object member across the surface of said track;

said reversing means including a control means for controlling the direction of said object member;

said reversing means reversing said direction of said object member across the surface of said track in response to impingement of said projectile upon said control means.

4,198,050

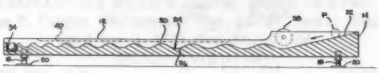
GAME DEVICE WITH RELEASE RAMP AND SCORING RECESSES

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356; Delmar K. Everitt, Woodland Hills, Calif.; Ronald F. Chesley, La Crescenta, Calif., and Richard D. Frierdich, Canoga Park, Calif., assignors to Adolph E. Goldfarb, Northridge, Calif.

Filed Feb. 9, 1978, Ser. No. 876,418

Int. Cl.[2] A63F 7/04, 7/14

U.S. Cl. 273—120 R **12 Claims**



1. A competitive game device comprising:

(a) frame means,

(b) a longitudinally extending playing surface on said frame means having a starting end and a plurality of longitudinally spaced apart generally transversely extending recesses separated by ridge portions with at least one of the recesses having a higher scoring value than other of the recesses, said recesses being generally level from side to side, said playing surface being provided by a covering layer, there being a first pair of adjacent successive recesses and a second pair of adjacent successive recesses, said first pair being closer to said starting end, the recesses of said first pair being further apart than the recesses of said second pair, and

(c) a ramp on said frame means inclined downwardly to the starting end of the playing surface so that a player may release a playing ball on said ramp so that the ball will roll from said ramp through at least one of the recesses, and with the player attempting to determine the proper position on the ramp to release said ball so that the ball will roll so as to maximize his score,

said frame means being provided with a plurality of upstanding rails on opposite longitudinal sides of said playing surface, a groove being formed in at least one of said rails for leveling said playing surface in a longitudinal direction.

4,198,051

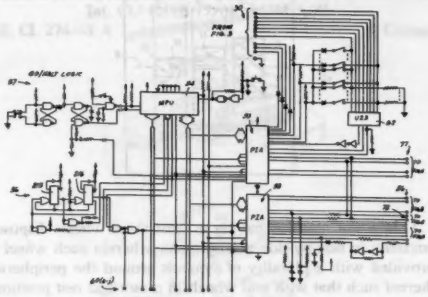
COMPUTERIZED PIN BALL MACHINE

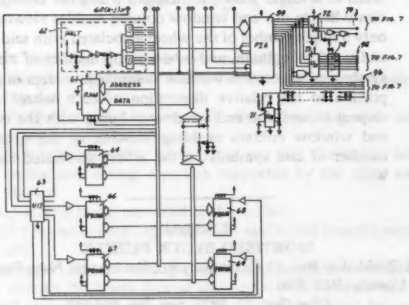
Marion F. Bracha, Chicago, and William H. Englehardt, Skokie, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Filed Nov. 19, 1975, Ser. No. 633,470

Int. Cl.[2] A63F 7/00

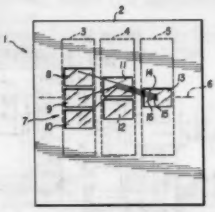
U.S. Cl. 273—121 A **22 Claims**





1. A pinball machine having visual indicators and a playing field with a plurality of ball responsive switches and a digital computer means, including one or more input ports and output ports, for receiving input signals in response to said ball responsive switches through an input port, for supplying switch address signals corresponding to selected ball responsive switches through an output port, and for supplying output signals corresponding to selected visual indicators through an output port in response to the input signals, said machine further comprising a first control circuit including interface means having an output port and an input port and being operatively connected to the ball responsive switches for supplying switch addressing test signals to said selected switches in response to the computer means switch address signals and for supplying switch input signals from select switches to said input port, and a second control circuit separate from said first control circuit having an output port and being operatively connected to the visual indicators for supplying visual indicator address signals and visual indicator data signals to activate said visual indicators in response to the computer means visual indicator output signals.

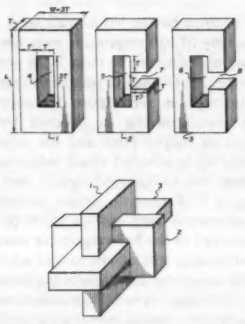
4,198,052
SLOT MACHINE
Paul Gauselmann, Espelkamp, Fed. Rep. of Germany, assignor to ADP - Automaten GmbH, Espelkamp, Fed. Rep. of Germany
Filed Sep. 27, 1978, Ser. No. 946,332
Int. Cl.[2] A63F 5/04
U.S. Cl. 273—143 R 6 Claims



1. In a slot machine having at least three wheels disposed coaxially in side-by-side arrangement, wherein each wheel is provided with a plurality of symbols around the peripheries thereof such that with said wheels in prescribed rest positions said symbols define the results of play, said slot machine having a housing essentially enclosing said wheels, said housing having a plurality of windows through which at least one symbol of each wheel is visible, the improvement comprising:

said windows disposed in a plurality of columns, each dedicated to a single wheel, to define a triangular configuration wherein one end window column enables viewing of only a single symbol of the wheel associated with said one end window column, and wherein the number of visible symbols of successive window columns increases in proportion to the relative disposition of each wheel with respect to said one end window column, with the other end window column enabling viewing of the greatest number of said symbols on the wheel associated therewith.

4,198,053
MORTISED BLOCK PUZZLE
M. Prabhakar Rao, 15 Canterbury St., Dartmouth, Nova Scotia, Canada (B2Y 1S8)
Filed Dec. 27, 1977, Ser. No. 864,865
Int. Cl.[2] A63F 9/12
U.S. Cl. 273—160 5 Claims



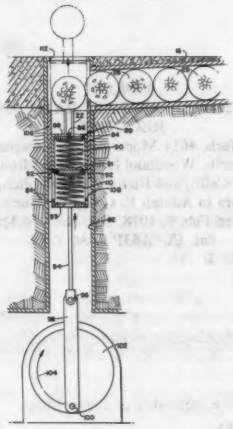
1. A block puzzle consisting of:

(a) a first block having a characteristic "O"-shape imparted by a non-rectangular aperture in said first block; and

(b) second and third blocks, each of which blocks has a characteristic "C"-shape imparted by a "T"-shaped slot in the block;

said blocks being slidably engageable into a mutually perpendicular interlocking arrangement in which each block passes through the other two blocks substantially concealing the "O"-shape of said first block, the "C"-shape of said second block, and the "C"-shape of said third block.

4,198,054
AUTOMATIC GOLF BALL TEEING DEVICE
Arthur Stone, Apt. 504, 3625 N. Country Club Dr., N. Miami Beach, Fla. 33180
Division of Ser. No. 855,666, Nov. 29, 1977, Pat. No. 4,146,232.
This application Jul. 25, 1978, Ser. No. 927,918
Int. Cl.[2] A63B 57/00
U.S. Cl. 273—201 6 Claims



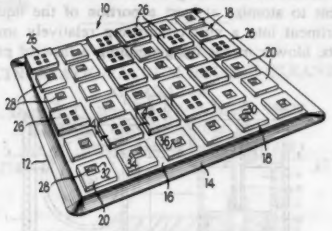
1. An automatic golf ball teeing apparatus, comprising a chamber located beneath the ground, a piston movable in said chamber between first and second positions vertically relative to said chamber, means for moving said piston between the first and second positions, the piston including first and second movable means in the piston, the first movable means being located at the top of the piston, first biasing means for biasing the first movable means upwardly, a tee connected at the top of the first movable means and projecting outwardly from the top of the piston, the second movable means being located along the length of the piston, second biasing means for biasing the second movable means upwardly, a sleeve located around the outer surface of the piston and movable relative thereto and extending above the piston when the piston is in the lower position, connecting means for connecting the sleeve to the second movable means, an opening in the piston for allowing the connecting means and the second movable means to move relative to the piston, stop means located in the chamber for engaging the sleeve as the piston moves toward the second position for stopping movement of the sleeve relative to the piston, the second biasing means urging the sleeve back to its initial position as the piston moves toward its first position and the sleeve disengages from the stop means.

4,198,055

INTERACTING GAME BOARD AND PLAYING PIECE

Alex Imatt, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 10, 1978, Ser. No. 876,408
Int. Cl.[2] A63F *3/00, 3/02*
U.S. Cl. 273—243 4 Claims



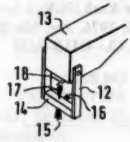
1. A game apparatus, comprising:
a base having a playing area and a plurality of stations defined thereon;
a plurality of playing pieces positionable on said stations;
movable means on said playing pieces for indicating a permissible move of the playing piece including indicia on the movable means for providing information indicative of the permissible move; and
control means on the base for varying the indication of the movable means, said control means comprising an aperture on said base for engagement with said movable means to align the indicia in a predetermined position, said aperture being a polygon having a predetermined number of sides and said movable means including a three-dimensional tapered solid having a base with a similar number of sides.

4,198,056

PROTECTIVE DEVICE FOR RECORD PLAYER

Tristan P. Cooper, 40aMonahan Ave., Purley, Surrey, England

Filed Jun. 1, 1978, Ser. No. 911,466
Int. Cl.[2] G11B *3/58*
U.S. Cl. 274—1 R 16 Claims



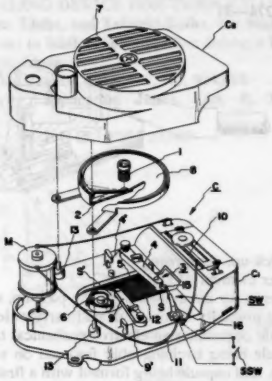
1. A protective device for a record player with a pickup arm having a phonograph cartridge with a stylus which projects downwards when in use to contact the groove of a record beneath it, said device comprising a pivotable member having a protective member and means for pivotably attaching said pivotable member to the cartridge or the pickup arm in such a manner that, when the pickup arm is lowered to place the stylus on the moving record, said pivotable member engages said record to pivot the same from a guard position wherein said protective member hangs below the stylus to a playing position wherein said protective member is clear of the stylus,
a contact brush affixed to said pivotable member for engaging said record upon lowering of said pickup arm and pivoting said pivotable member toward said playing position as a result of movement of said record, and
a wiping element which projects upwards towards the stylus when the pivotable member is in the guard position and cooperates with the stylus to remove dust and fluff therefrom when the pivotable member pivots between said contact position and said guard position.

4,198,057

SIMPLIFIED RECORD PLAYER

Yasuyuki Miura, Machida, Japan, assignor to Ozen Co., Ltd., Machida, Japan

Filed Feb. 7, 1979, Ser. No. 10,262
Claims priority, application Japan, Dec. 29, 1978, 53-162332
Int. Cl.[2] G11B *17/06;* A63H *3/33*
U.S. Cl. 274—1 A 7 Claims



1. A simplified record player comprising:
a casing having a sound transfer member cantilever-mounted thereon;
stylus force spring means resiliently cooperating with said sound transfer member;
a tone arm pivotably mounted at one end thereof to said casing and having a pickup supported by the other end thereof
said pickup being provided with a stylus;
said tone arm being disposed under said sound transfer member;
an upper face of said pickup being adapted to slidably contact the lower face of said sound transfer member;
said stylus being adapted to be resiliently urged by said sound transfer member to engage with sound grooves of a record disc;
a cam disposed substantially at the rotational center of said record disc;
said cam cooperating with said sound transfer member to upwardly lift said sound transfer member when said pickup reaches the terminal point of sound reproduction of said record disc and to permit said stylus to disengage from said sound grooves and to return back to the starting point of sound reproduction;
an electric power source and an electric motor for driving said record disc, said power source and said motor being connected by an electric circuit;
a switch cooperating with said pickup so as to be opened by said pickup when said pickup returns to said starting point to interrupt an electrical connection in said electric current;
said switch including a fixed contact and a movable contact disposed in substantially vertically opposed relation against each other substantially in the same direction as that of said stylus force;
said movable contact and said tone arm operatively communicating with each other such that said tone arm is disposed above the upper face of said movable contact when said tone arm is returned to said starting point and said

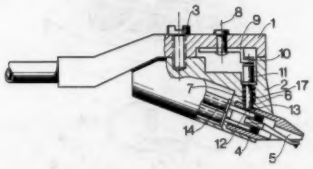
tone arm pushes said movable contact downwardly against a spring force, away from engagement with said fixed contact, so as to interrupt said electrical connection and moderate rapid impinging of said stylus on said record disc.

4,198,058

PICK-UP WITH EXCHANGEABLE STYLUS

Jörg Schamberger, and Heinrich Zimmermann, both of St. Georgen, Fed. Rep. of Germany, assignors to Dual Gebruder Steidinger, St. Georgen, Fed. Rep. of Germany

Filed Aug. 21, 1978, Ser. No. 935,535
Int. Cl.[2] G11B *3/02*
U.S. Cl. 274—37 **5 Claims**



1. A pick-up, comprising

a carrier element of a pick-up,

arm means for manipulation of the pick-up, said arm means being pivotally mounted in said carrier element,

a capsule containing an electro-mechanical transducer, said capsule being exchangeably fastened on said carrier element, said capsule being formed with a first opening and a second opening,

a needle carrier having a rear end, said needle carrier being held in a pushed in position in said first opening of said capsule,

an abutment means in said capsule for limiting a push-in movement of said needle carrier in said first opening,

a pin displaceably mounted in said second opening of said capsule substantially in a direction transversely to said first opening of said capsule and respectively to the push-in movement of said needle carrier in the capsule,

spring means disposed between said capsule and said pin for moving said pin in a direction away from said first opening of said capsule,

said needle carrier being formed with recess means arranged for reception of one end of said pin therein when said needle carrier with said rear end abuts said abutment means in said capsule upon being pushed into said first opening of said capsule, thereby said needle carrier being fixed with respect to said capsule in said pushed in position

coupling means disposed between the other end of said pin and said arm means, said coupling means for displacing said pin in an axial direction opposite to said spring means.

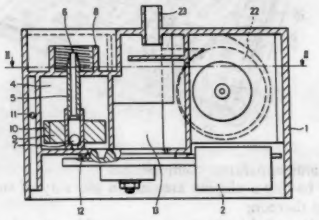
4,198,059

METHOD AND MEANS FOR PLAYING BACK OR MOVING OF RECORDS OR TAPES SUBSTANTIALLY FREE OF ELECTROSTATIC CHARGES

Fred Zurschmiede, Bleichemattstrasse 12, 4562 Biberist, Soleure, Switzerland

Filed Sep. 5, 1978, Ser. No. 939,516
Claims priority, application Switzerland, Sep. 6, 1977, 10862/77
Int. Cl.[2] G11B *3/58*
U.S. Cl. 274—47 **13 Claims**

1. Apparatus for delivering moisture to and for forming a relatively thin layer of moisture on a surface portion of a recording medium constructed of an electrically non-conducting material preparatory to the passage of such surface portion past a reading/recording station, the apparatus comrpising: a housing defining a chamber for holding a body of liquid; means for flowing liquid into the chamber, means for interrupting the flow of liquid into the chamber after the liquid has reached a predetermined level therein, and means for sensing the level of the body of liquid in the chamber; the housing further defining a mist compartment in fluid communication with the chamber, and a membrane defining a wall of the compartment and positioned so that the membrane is in contact with liquid in the compartment; an ultrasonic oscillator operatively coupled to the membrane for subjecting the membrane to ultrasonic pulses sufficient to atomize at least a portion of the liquid in the compartment into a mist comprising relatively small liquid droplets; blower means for generating a flow of pressurized



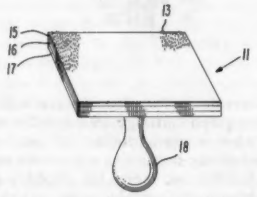
air; conduit means fluidly connecting a station of the mist compartment holding the mist with the blower means so as to entrain the mist in the airflow generated by the blower means and thereby form a pressurized aerosol stream comprising air and liquid droplets dispersed therein; delivery means fluidly connected with the conduit means and the blower means for flowing the aerosol stream towards the surface portion of the recording medium; and discharge means fluidly connected with the delivery means for flowing the aerosol stream over the surface portion of the recording medium to establish a liquid film thereon and to thereby eliminate the electrostatic charges on the surface portion before the surface portion passes the station.

4,198,060

WIPING APPARATUS AND METHOD FOR A HIGH-DENSITY INFORMATION RECORD

Frederick L. Dixon, Trenton; Leonard P. Fox, Cherry Hill, and Edward G. Trachman, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 6, 1976, Ser. No. 748,009
Int. Cl.[2] G11B *3/58*
U.S. Cl. 274—47 **8 Claims**



1. In a playback system for recovering signal information represented on a grooved surface of a disc record by means of geometric variations in the bottom of a spiral groove having a given width; an apparatus comprising:

(a) a wiping pad comprising:

a backing element; and

a plurality of fibers projecting from said backing element and having ridged outer surfaces, the diameter of each of said fibers being greater than said given width and

the width of at least some of the ridges on each of said fibers being narrower than said given width;

(b) a rotatable turntable havng a disc record supporting surface;

(c) means for causing rotation of said turntable; and

(d) means, coupled to said wiping pad and responsive to the operation of said playback system, for causing contact between said fibers and a grooved surface of a disc supported on said turntable surface during rotation of said turntable.

4,198,061

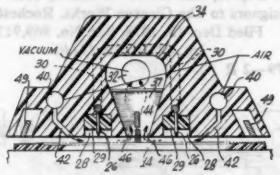
ELECTROSTATIC-VACUUM RECORD CLEANING APPARATUS

Robert E. Dunn, P.O. Box 928, Dixon, Calif. 95620

Filed Mar. 6, 1978, Ser. No. 883,500

Int. Cl.[2] B08B *6/00, 5/04;* G11B *3/58*

U.S. Cl. 274—47 **17 Claims**



1. An apparatus for cleaning rigid information-bearing record disks comprising:

a turntable for supporting and rotating said record disk to be cleaned;

a housing extending over an exposed information-bearing surface of said record disk;

charging means for imparting an electrostatic charge to dust particles on said surface, said charging means comprising a plurality of charging elements mounted on said housing, arrayed in at least one row extending in a substantially radial direction with respect to said record disk, and spaced from said surface; and

attraction means for electrostatically attracting particles that have been charged by said charging means, said attraction means comprising at least one attraction member to which an electrostatic charge is imparted, said attraction member being supported by said housing parallel to said row of charging elements.

4,198,062

VALVE STEM SEAL

Anthony J. Grzesiak, Burnham, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 1, 1978, Ser. No. 939,030

Int. Cl.[2] F16J *15/52*

U.S. Cl. 277—3 **17 Claims**

1. A seal adapted to be mounted on the end of a cylindrical guide boss having a reciprocating rod therein, comprising a relatively inflexible seal body including an annular skirt portion adapted to encompass the guide boss and an upper generally cylindrical wall of a smaller diameter than said skirt portion and joined thereto by an inclined offset portion, an inwardly extending rib on the interior surface of said upper wall, and a resilient insert having an exterior surface spaced from the interior surface of said upper wall and an interior surface sealingly engaging said rod, said insert exterior wall having an annular groove receiving said rib.

4,198,063

SHAFT SEALING DEVICE FOR TURBOCHARGER

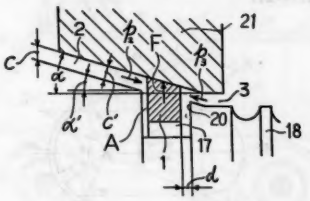
Masami Shimizu, Chiba, and Takaaki Koike, Hachioji, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1978, Ser. No. 924,693

Claims priority, application Japan, Oct. 6, 1977, 52-133708[U]

Int. Cl.[2] F16J *15/40*

U.S. Cl. 277—79 **1 Claim**



1. In a piston ring type shaft sealing device for a turbocharger, the improvement wherein the outer peripheral surface of a split piston ring and the mating surface of a shaft bore of a bearing casing are tapered at the same angle toward the high pressure side, said turbine shaft being axially tapered in such a way that said turbine shaft may be co-axially spaced apart from the wall surface of the shaft bore of said bearing casing by a predetermined clearance, the adjacent edges of said split ring adapted to gradually press together to finally abut as the ring is displaced toward the low pressure side to prevent further displacement of the ring toward the low pressure side.

4,198,064

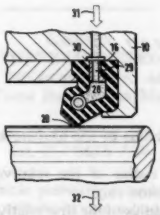
SHAFT SEAL

Dieter Huhn, Bromma, Sweden, assignor to Gustav Huhn AB, Stockholm, Sweden

Filed Oct. 31, 1978, Ser. No. 956,342

Int. Cl.[2] F16J *15/32*

U.S. Cl. 277—152 **4 Claims**



1. Sealing means for shafts with rotating, helical or reciprocal motion, said sealing means comprising the combination of a shaft sealing ring of elastic or plastic material having a sealing lip that is adapted to be placed in sealing contact with the outer

surface of the shaft and a body lying around the sealing lip with a radially inwardly acting spring force, said shaft sealing ring including first and second axially separated flanges one of which is nearer the medium to be sealed than the other and an intermediate ring, said flanges being adapted to be clamped with a sealing effect between a pressure ring and a fixed wall, there being further included a curved wall extending substantially radially between said sealing lip and said flange nearest the medium to be sealed to thereby maintain the elastic attachment to the fixed wall, said sealing lip being situated at a small axial distance from said flange nearest the medium to be sealed to thereby at least partly relieve said sealing means from pressure of the medium to be sealed.

4,198,065

PISTON RING FOR INTERNAL COMBUSTION ENGINE

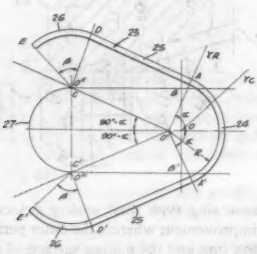
Takeo Fukui, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1979, Ser. No. 22,802

Claims priority, application Japan, Mar. 31, 1978, 53-40949[U]

Int. Cl.[2] F16J 9/00

U.S. Cl. 277—217 **1 Claim**



1. For use in an internal combustion engine having an oblong piston mounted to reciprocate within an oblong cylinder having arcuate end portions, a piston ring adapted to be received within a peripheral groove on the piston, the piston ring in its free state before installation having straight side portions of equal length each having one end merging with a relatively longer arcuate portion of the ring, the other ends of said straight portions merging with first and second relatively shorter arcuate portions of the piston ring, said shorter arcuate portions defining between them a gap, the free shape of the piston ring having the following characteristics:

$$0-0'=\gamma R-\gamma C$$

$$\alpha=90^\circ\times\gamma C/\gamma R$$

$$\beta<\alpha$$

$$AD=BC$$

$$\angle 0'AD=90^\circ=\angle 0'A'D'$$

$$D0''=D'0'''=\gamma R$$

where

0=center of the radius of the arcuate end portions of the cylinder

0′=center of the radius of the relatively longer arcuate portion of the piston ring

0″=center of the radius of the first relatively shorter arcuate portion of the piston ring

0‴=center of the radius of the second relatively shorter arcuate portion of the piston ring

γR: radius of the relatively longer arcuate portion of the piston ring

γC: radius of the arcuate end portions of the cylinder

A and D: ends of one straight portion of the piston ring

A′ and D′: ends of the other straight portion of the piston ring

B and C: ends of one straight portion of the cylinder

α: angle between the longitudinal axis of the piston ring and a line between 0′ and the point where either straight side portion of the piston ring merges with the relatively longer arcuate portion of the ring

E: end of the first relatively shorter arcuate portion of the piston ring

E′: end of the second relatively shorter arcuate portion of the piston ring

β: ∠D0″E=∠D′0‴E′.

4,198,066

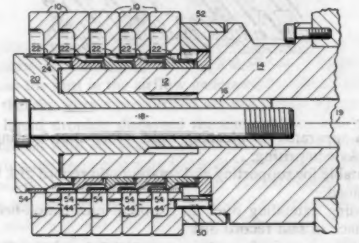
EXPANDABLE ARBOR FOR HOLDING A STACK OF ELEMENTS

Thomas A. Deprez, and Edwin C. Jaehn, both of Rochester, N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed Dec. 15, 1978, Ser. No. 969,912

Int. Cl.[2] B23B 31/40

U.S. Cl. 279—2 R **11 Claims**



1. An arbor for clamping more than one element having a cylindrical bore therethrough, said arbor being of the type which includes a series of expandable collets which are equal in number to the number of elements to be clamped, and said series of collets being arranged on a hub along a common axis of the arbor so that the elements can be stacked along said axis with each element being positioned around a collet of the series, said arbor being characterized by

said series of collets having a varying force requirement for expanding individual collets in the series, said varying force requirement being progressively greater towards a first end of said series than towards a second end thereof so as to produce sequential clamping of a stack of elements beginning with a clamping of an element at the first end of the stack in which the least amount of force is required for expanding an associated collet and ending with a clamping of an element at the second end of the stack in which the greatest amount of force is required for expanding an associated collet and wherein said first end of the stack is remote from the end of the stack to which the clamping force is applied.

4,198,067

POWER-OPERATED CHUCK

Josef Steinberger, Düsseldorf, Fed. Rep. of Germany, assignor to Paul Forkardt Kommanditgesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 920,067

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2729939

Int. Cl.[2] B23B 31/16

U.S. Cl. 279—121 **6 Claims**

1. A power-operated chuck comprising,

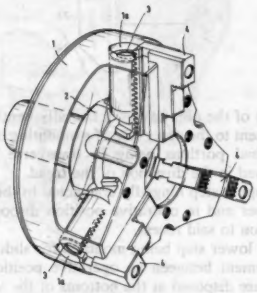
a chuck body formed with radial oriented guide bores and

independently therefrom radial oriented guide means both extending continuously therethrough to the outer surface of the chuck body,

drive jaws mounted radially movable in said chuck body complementarily in said guide bores and removeable therefrom,

gripping jaws at least partially complementarily mounted in said guide means in said chuck body and removeable therefrom, said guide means for radially guiding said gripping jaws therein,

spur teeth means for effecting a positive non-releaseable connection between said gripping jaws and said drive jaws, respectively, maintained exclusively by said guide bores and guide means and the complementary mounting of said drive jaws and gripping jaws, respectively, therein, and said spur teeth means for driving each of said gripping jaws by one of said drive jaws, respectively, and for effecting a releaseable connection without tools between said gripping jaws and said drive jaws, respectively, when



said jaws are removed from said guide bores and guide means,

a chuck piston means, mounted directly guideable in said chuck body and axially movable in said chuck body, for jointly driving all said drive jaws in an engaged position therewith,

each of said drive jaws, independently of a corresponding gripping jaw being mounted directly within said chuck body in one of said guide bores, being guided therein in a radial direction and non-displaceably in a tangential direction and being fixed therein in position in an axial direction, whereby an indirect securing of the positive non-slipping connection between said gripping jaws and said driving jaws, respectively, occurs,

means for moving said chuck piston means beyond a working stroke into a disengaged position from said drive jaws, whereby said drive jaws can be radially removed through said guide bores from said chuck body together with said corresponding gripping jaws from said guide means for relative readjustment outside said chuck body.

4,198,068

MOVABLE AMUSEMENT TOY

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Northridge, Calif.

Filed Feb. 10, 1978, Ser. No. 876,629
Int. Cl.[2] A63G *19/00*
U.S. Cl. 280—1.1 R **12 Claims**

1. An amusement toy vehicle comprising:

(a) a vehicle body adapted for riding or pushing or pulling, said body also having an upper surface,

(b) at least one axle on said body,

(c) at least one wheel on said axle,

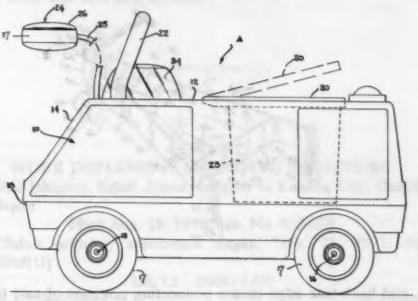
(d) an elongate, somewhat rectangularly shaped trough formed in or near the upper surface of said body and having an inclined wall leading from said upper surface into said trough,

(e) a highly visible somewhat rectangularly shaped transparent cover disposed over said trough and having a portion spaced upwardly from said upper surface to form a chamber therein to receive a plurality of objects ejected from said trough into said chamber and with said objects restrained by said transparent cover, said chamber having a volume substantially greater than a relatively large number of the objects, said trough having a transverse dimension almost as great as the transverse dimension of said chamber, and

(f) an object ejecting mechanism located within said body, said object ejecting mechanism being comprised of:

(1) a generally vertically disposed vertically shiftable member,

(2) an elongate, somewhat rectangularly shaped popper head on said vertically shiftable member capable of extending at least partially into said trough, said head



having a relatively flat upper surface with a surface area substantially equal to or only slightly less than the surface area of said trough, the flat upper surface of said head being substantially larger than any of said objects so that said head may engage and eject a relatively large number of the objects simultaneously into said chamber, said flat upper surface being generally horizontally disposed when engaging said objects and ejecting same into said chamber,

(3) camming means cooperatable with said axles causing said vertically shiftable member to first shift downwardly on rotation of said axle and thereafter permitting operative disengagement of said shiftable member with respect to said axle, and

(4) spring means biasing said shiftable member generally upwardly upon said disengagement so that said head engages said relatively large number of said objects and ejects them rapidly and substantially simultaneously into said chamber to create a visual appearance of fast moving action.

4,198,069

FOLDING THREE-CORNERED VEHICLE

Edward D. O'Brian, 910 Iroquois Ave., Anaheim, and William M. Plachy, 182 Cerco Rosado, San Marcos, both of Calif. 92801

Filed Nov. 24, 1978, Ser. No. 963,375
Int. Cl.[2] B62B *7/06*
U.S. Cl. 280—42 **8 Claims**

1. A wheeled vehicle primarily intended to be utilized for play purposes, said vehicle having a body and a plurality of wheels supporting said body in which the improvement comprises:

said body including two side panels, two bottom panels, two back panels, front hinge means, two separate bottom-side edge hinge means, two separate backside edge hinge

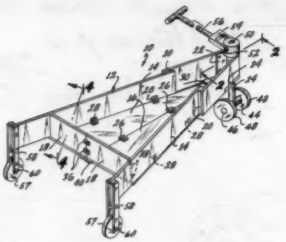
means, bottom panel connecting hinge means and back panel connecting hinge means,

said front hinge means connecting said side panels so that said side panels may be pivoted toward and away from one another,

said bottom panel connecting hinge means connecting said bottom panels to one another so that they can be pivoted from a position in which they are aligned with one another to a position in which they are located adjacent to one another,

said bottom-side edge hinge means connecting portions of said bottom panels remote from said bottom panel connecting hinge means to said side panels so that as said sides are pivoted with respect to one another said bottom panels are also pivoted with respect to one another,

said back panel connecting hinge means connecting said back panels to one another so that they can be pivoted from a position in which they are aligned with one another to a position in which they are located adjacent to one another,



said back-side edge means connecting portions of said bottom panels remote from said bottom panel connecting hinge means to said sides so that as said sides are pivoted with respect to one another said back panels are also pivoted with respect to one another,

all of said hinge means, and all of said panels being connected so as to permit said body to be manipulated between an open position in which said side panels diverge away from said front hinge means and in which said bottom panels and said back panels extend between said side panels so as to serve as the bottom and the back of said body and a folded position in which said side panels are located closely adjacent to one another, said bottom panels are located closely adjacent to one another and said back panels are also located closely adjacent to one another,

at least one front wheel mounted on said body adjacent to said front hinge means and beneath said body when said body is in said open position,

at least one wheel located at the extremity of each side panel remote from said front hinge means and beneath said body when said body is in said open position.

4,198,070

STEP ASSEMBLY FOR AUTOMOTIVE STEP BUMPERS

Raywood C. Weiler, Fontana, Calif., assignor to Blackstone Mfg. Co., Inc., Chicago, Ill.

Filed Oct. 11, 1978, Ser. No. 950,426

Int. Cl.[2] B60R *3/02*

U.S. Cl. 280—166 **3 Claims**

1. A step assembly for use on vehicles having a rear step bumper having a rear face and a top face and a median recess, said assembly comprising in combination,

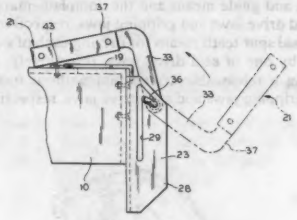
(a) a pair of angle mounting brackets adapted to be secured to the rear face of said bumper each outwardly of said recess,

(b) each of said mounting brackets having a rearwardly extending portion having a slot substantially in the form of an inverted J with said slots being in transverse registration,

(c) each of said slots having an elongated vertical leg and a shorter leg extending downwardly and outwardly from said bumper at an acute angle from the top of said vertical leg,

(d) a lower step comprising a pair of substantially L-shaped bracket members supporting at their lower ends a transverse tread,

(e) each of said bracket members carrying a transversely extending pin with said pins being in axial registration and with each pin extending through a respective slot,



(f) each of the pins having a laterally bent terminal portion adjacent to the outer side of a mounting bracket, with said terminal portions being in transverse registration and inclined in the direction of the tread,

(g) an upper step hingedly connected to the top face of said bumper and in operative position disposed in overlying relation to said recess,

(h) said lower step being mounted for sliding and swinging movement between an operative position in which the pins are disposed at the bottoms of the vertical slots and the tread is disposed in close proximity to the bottom of the bumper, and an inoperative position in which the pins are disposed at the lower ends of the shorter slots and the tread is inverted in overlying relation to said upper step.

4,198,071

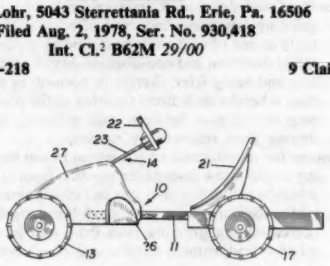
TOY VEHICLE

Raymond J. Lohr, 5043 Sterrettania Rd., Erie, Pa. 16506

Filed Aug. 2, 1978, Ser. No. 930,418

Int. Cl.[2] B62M *29/00*

U.S. Cl. 280—218 **9 Claims**



1. A toy vehicle (10) comprising,

a support member (11),

first wheels (13) rotatably attached to a first end of said support member (11) by first wheel support means (12, 34),

a sleeve (15) disposed about a second end of said support member (11) and generally concentric thereto,

a second axle (16) rotatably attached to said sleeve (15),

second wheels (17) attached to said second axle (16),

a rack (18) attached to said support member (11) at said second end,

a pinion (19) engaging said rack and rotatably attached to said second axle (16),

one way clutch means connecting said pinion to said second

axle whereby an operator can move said support member (11) forward relative to said sleeve (15), thereby providing a power stroke moving said rack (18) relative to said pinion and rotating said pinion (19) and rotating said second axle (16) and said second wheels (17) driving said vehicle forward, said operator can then move said support member (11) rearward relative to said sleeve (15), thereby providing a return stroke.

4,198,072

WHEELED VEHICLE

Grant Hopkins, Walla Walla, Wash., assignor to Mark Cantrell, Walla Walla, Wash.

Filed Sep. 1, 1978, Ser. No. 938,843
Int. Cl.[2] B62K *9/00, 21/00*
U.S. Cl. 280—267 **17 Claims**

1. A wheeled vehicle comprising:
an elongated frame having a forward end and a rearward end;
seat means at the rearward end of the frame for receiving and supporting a rider;
a ground engaging drive wheel mounted to the forward end of the frame for rotation about a fixed drive wheel axis;
means for transmitting driving power to the drive wheel while the vehicle is in use;
a pair of rear ground-engaging wheels located at opposite sides of the frame;
a transverse axle rotatably mounting the rear ground-engaging wheels about individual rear wheel axes; and
carriage means movably mounting the axle to the rearward end of the frame for permitting the rider to pivotally adjust the axle relative to the frame while the vehicle is in use by (a) pivotal movement of the axle about a steering axis located within a vertical plane, and (b) by pivotal movement of the axle about a steering control axis about which the steering axis may be angularly adjusted within said vertical plane relative to the ground surface.

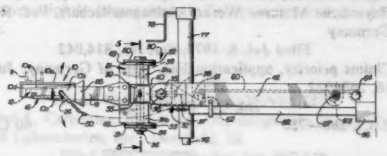
4,198,073

TRAILER HITCH

Gary E. Olsen, 13037 Briarwood, Cerritos, Calif. 90701

Filed Sep. 18, 1978, Ser. No. 943,448
Int. Cl.[2] B62D *53/00*
U.S. Cl. 280—406 A **17 Claims**

1. In a trailer hitch, the combination comprising
(a) universal joint means including first and second members, the joint means defining mutually orthogonal axes about which said members are relatively rotatable, said axes including a generally vertical axis associated with the first member, and a generally lateral axis associated with the second member, there being a lever pivotally connected to said members to pivot the first member up and down about the lateral axis,
(b) first frame structure connected to the first member and attachable to a towing vehicle, and second frame structure connected to the second member and attachable to a towed vehicle, and
(c) weight adjustment means on the second frame structure



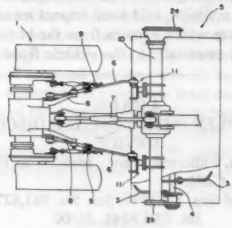
operatively connected to the first frame structure substantially entirely through said lever and said first member to adjustably displace the first frame structure up and down by force transmission substantially entirely through the lever and said first member.

4,198,074

WORK IMPLEMENT MOUNTING STRUCTURE

Toshio Ishiguro, Sakai, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Aug. 18, 1978, Ser. No. 935,055
Claims priority, application Japan, Nov. 29, 1977, 52-161064[U]
Int. Cl.[2] B60D *1/00*
U.S. Cl. 280—415 A **4 Claims**



1. A mounting structure for connecting a work implement to a tractor in four transverse positions comprising, in combination, a pair of transversely spaced right and left links extending from said tractor, a pair of right and left coupling means, each of said coupling means including a coupling member for connecting said coupling means to said work implement with said pair of coupling means in transversely spaced relationship and a coupling member for connecting said coupling means to a respective link, said coupling members on each of said coupling means being disposed in transversely displaced relationship, said coupling member for said link including a pair of transversely spaced plate portions differentially offset from said coupling member for said work implement, means for connecting said plate portions selectively to said respective link, said coupling member for said work implement being adapted to selectively connect said coupling means to said work implement in a plurality of positions to dispose said coupling member for said respective link in transversely reversed positions to thereby permit said respective link to be attached to a selected one of said plate portions by said connecting means in a selected one of four transverse positions.

4,198,075

SAFETY INSTALLATION IN MOTOR VEHICLES WITH A KNEE IMPACT ELEMENT

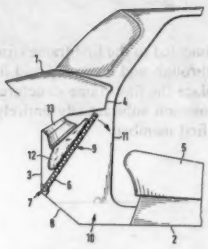
Adolf Kob, Erding; Eduard Blatner, Augsburg; Heinz Bielmeier, Ingolstadt; Wolfgang Kirchberger, Lohof, and Klaus Gersmann, Munich, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 8, 1977, Ser. No. 814,042

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1976, 2634222

Int. Cl.[2] B60R *21/08*

U.S. Cl. 280—753 40 Claims



1. In a motor vehicle with a body forming a passenger compartment and comprising a vehicle floor, a dashboard adjoining said floor and an instrument panel, at least one passenger seat being arranged within said passenger compartment and mounted on the vehicle floor at a distance from the dashboard, the improvement comprising a safety installation for a passenger coordinated to the seat and including a movably arranged knee impact means pivotally mounted to a fixed part of said body and a device for pivoting the knee impact means from a normal position into a position near the knees of the passenger in response to a collision, said knee impact means including a bending-rigid plate which extends from the bottom side of the instrument panel essentially to the vehicle floor.

4,198,076

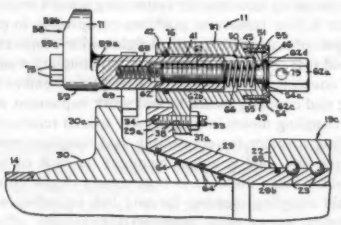
PIPE COUPLER WITH POSITIVE DISCONNECT DEVICE

George A. Mezei, Fullerton, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Sep. 12, 1978, Ser. No. 941,627

Int. Cl.[2] F16L *23/00*

U.S. Cl. 285—18 12 Claims



1. A coupling device for releasably connecting two pipes together, each pipe having a flange thereon, said device comprising:

a housing with an internal, open-ended bore;

means for securing said housing to a first one of said flanges;

a clamp arm slidably mounted in said bore of said housing;

movable clamping means mounted on said clamp arm for contacting a second one of said flanges and for moving said second flange toward said first flange as said clamp arm slides into said bore;

movable disconnect means mounted on said clamp arm for contacting said second flange and for moving said second flange away from said first flange as said clamp arm slides outwardly in said bore; and

means for moving said clamp arm lengthwise in said bore of said housing and for pivoting said clamping means and said disconnect means between first and second positions, wherein in said first position said clamping means is located to contact said second flange when said first and said second flanges are axially aligned and in said first position said disconnect means is located aside from said axial alignment, and in said second position said clamping means is located aside from said axial alignment and said disconnect means is located to contact said second flange when said first and said second flanges are axially aligned.

4,198,077

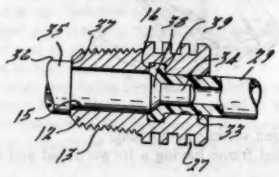
TWO-PIECE FITTING ASSEMBLY

William G. Oldford, Lexington, Mich., assignor to Huron Tool & Manufacturing, Division of U. S. Industries, Inc., Lexington, Mich.

Division of Ser. No. 761,235, Jan. 21, 1977, Pat. No. 4,128,264. This application Aug. 14, 1978, Ser. No. 933,659

Int. Cl.[2] F16L *33/18*

U.S. Cl. 285—21 3 Claims



1. A two-piece fitting assembly embodying a first fitting made of metal in the nature of a union having an external thread and a driving tool engaging means, a through aperture on the axis which is enlarged near the center forming an enlarged diameter annular recess, and a plurality of radial slots in the outer periphery of said first fitting for cooling thereof, the second fitting is a tube made of plastic material having a reduced diameter end disposed coaxially within one end of said aperture of said first fitting, said reduced end having an integral cylindrical head extending axially into said annular recess to permanently secure said second fitting against axial removal therefrom but permitting relative rotational movement between said first and second fittings, said head being formed at said reduced end of said tube by inserting said reduced end into said aperture at said one end and forcing said cylindrical head into engagement with a heat generating element inserted within the opposite end of said first fitting and located adjacent to said annular recess within said aperture, whereby said cylindrical head will deform under the influence of heat from said element and flow radially outwardly into and occupy the interior of said annular recess, and an O-ring between said fittings which is compressed to form a seal.

4,198,078

PRESSURIZED VIBRATION ISOLATOR

John T. Herbert, Horton, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

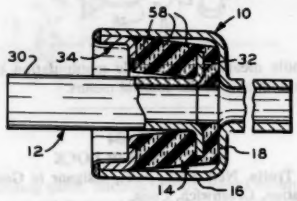
Filed Jul. 17, 1978, Ser. No. 924,937

Int. Cl.[2] F16L *27/02, 27/10, 55/00, 55/02*

U.S. Cl. 285—49 10 Claims

1. A pressurized fluid conducting vibration isolator for conduit systems comprising, in combination, a hollow thin wall

casing defining a chamber having an axis, and axial wall, and an inner wall transversely disposed to said axis, a conduit connection communicating with said chamber, a tubular thin wall stem having an axis coaxial with said chamber and including an inner end having an outwardly radially extending flange and an outer conduit attaching end, said stem inner end being located within said chamber with said flange axially spaced from said inner wall and radially spaced from said axial wall, an annular retainer sealed to said casing and adjacent said chamber having an annular portion transversely disposed to said casing axis and in axially spaced, opposed relationship to said stem flange, said flange being located between said retainer and casing inner wall, a vibration absorbing elastomer bonded solely to said stem at said flange and to said retainer annular portion, said elastomer being capable of movement relative to said stem and axial wall whereby said stem is capable of limited torsional and angular deflection relative to said casing axis by distortion of said elastomer and pressurized fluid intermediate said casing inner wall and stem flange compresses the elastomer intermediate said flange and retainer decreasing the fluid permeability thereof, said elastomer including an integral web bridging the flange outer diameter and further including an integral portion engaging said casing inner wall whereby said web cushions the flange against lateral approach relative to said axial wall.

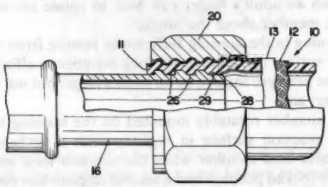


4,198,079

HOSE COUPLING JOINT

Atul Shah, Euclid, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Oct. 26, 1978, Ser. No. 955,037
Int. Cl.² F16L *33/22*
U.S. Cl. 285—245 **5 Claims**



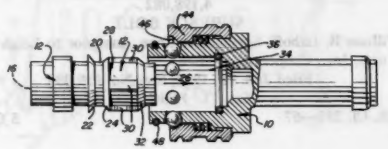
1. A hose coupling joint comprising a thermoplastic hose, an inner tubular member, and a nut, said inner tubular member having a plurality of spaced annular circumferentially continuous radially outwardly projecting ribs of substantially uniform outer diameter inserted into an end of said hose, said inner tubular member having a first cylindrical surface disposed between a forwardmost one said ribs and a forwardmost end of said inner tubular member, said nut having a tapered internal thread with rounded crests threaded over the exterior of said hose end, said thread being radially opposite all of said ribs and holding said hose in tight sealing engagement with said ribs, said tapered threads overlapping said first cylindrical surface and holding said hose end in tight sealing engagement therewith, said tapered thread having its largest diameter forwardly of said ribs and opposite said first cylindrical surface, said nut having a smooth counterbore adjacent said large diameter end of said tapered thread to receive hose material deformed radially outwardly forwardly of said large end of said tapered thread, and said counterbore being forwardly of said first cylnndrical surface of said tubular member and being of a diameter slightly larger than the initial outer diameter of said hose.

4,198,080

TELESCOPING-TYPE CONNECTOR

Walter L. Carpenter, Richmond, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed May 19, 1978, Ser. No. 907,520
Int. Cl.² F16L *27/00, 37/18*
U.S. Cl. 285—277 **2 Claims**



1. In a telescoping-type connector comprising outer and inner telescoping members, said inner telescoping member defining an outer circumferential groove and adapted to sealingly fit in telescoping relation within an aperture of the said outer telescoping member, said outer telescoping member including retention means for releasably projecting a plurality of spaced retaining members into said outer circumferential groove to retain said inner and outer members in said sealing, telescoping relation, the improvement comprising, in combination:

said inner telescoping member defining, between said circumferential grooves and the forward end of said inner member relative to said outer member, a recessed portion on its outer surface, and a plurality of circumferentially spaced, longitudinally extending rib members positioned within said recessed portion, said rib members being disposed in a position to prevent at least one of the retention members of the retention means from being projected into said recessed portion in any rotational position of said inner telescoping member while positioned within the outer telescoping member.

4,198,081

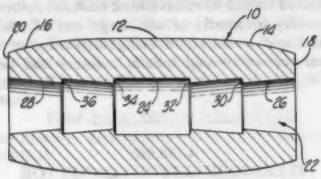
HEAT RECOVERABLE METALLIC COUPLING

John D. Harrison, Palo Alto, and James E. Jervis, Menlo Park, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 410,314, Oct. 29, 1973, Pat. No. 4,035,077, which is a continuation of Ser. No. 51,809, Jul. 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 852,722, Aug. 25, 1969, abandoned. This application May 26, 1977, Ser. No. 800,892
The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.
Int. Cl.² F16L *25/00*
U.S. Cl. 285—381 **8 Claims**

1. An article comprising a heat recoverable metallic material above its transition temperature, the article having been distorted a sufficient amount that both thermally recoverable and non-thermally recoverable plastic deformation took place, the article being maintained in a heat-unstable configuration by a restraining member in engagement with the article and exerting a restraining force in the direction opposite that of heat recovery of the material, wherein when the temperature of the article is reduced to below the transition temperature of the material, the article will expand in the direction of the restrain-

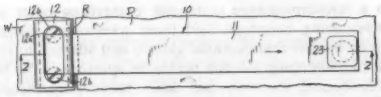
ing force an amount sufficient that the restraining member exerts no restraining force on the article, said expansion including spontaneous expansion occurring even when the restraining member exerts no force on the article.



4,198,082
SURFACE BOLT

William B. Imhoff, Springdale, Conn., assignor to Leigh Products, Inc., Coopersville, Mich.

Filed Jun. 26, 1978, Ser. No. 919,085
Int. Cl.[2] E05C 1/04
U.S. Cl. 292—67 5 Claims



1. A surface bolt comprising an elongated guide member, an elongated bolt, said bolt being mounted to said guide member for longitudinal movement thereon, biasing means carried by said guide member and acting on said bolt member to urge said bolt member away from said guide member whereby said biasing means normally maintains said bolt member in a spaced relation from said guide member, means for mounting said guide member to one of a fixed surface and a relatively movable surface, a keeper adapted to receive said bolt member when in an extended position, said keeper adapted to be mounted to the other of the fixed surface and the movable surface, said means for mounting said guide member comprising passages extending therethrough for receipt of fastening devices, said bolt enclosing said guide member and covering said means for mounting, detent means defined between said guide member and said bolt to latch said bolt against retraction when said bolt is in an extended position to said keeper whereby said bolt cannot be retracted from said keeper unless said bolt is moved against said biasing means toward said guide member to unlatch said detents.

4,198,083
FASTENER LATCH

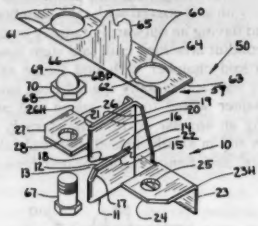
Herman S. Fessler, Coon Rapids, Minn., assignor to The Cornelius Company, Anoka, Minn.

Filed Apr. 10, 1978, Ser. No. 895,095
Int. Cl.[2] E05C 3/04
U.S. Cl. 292—205 33 Claims

1. A fastener latch for securing first and second structure members to each other, said latch being a single integral piece of sheet metal and comprising:

(a) a C-shaped clamping member having an open ended latching slot for receiving therein the first and second structure members to be secured together, said clamping members being first and second layers of the sheet metal abutted against and at 180 degrees to each other, each of said layers having substantially the same latching slot therein;

(b) journal means to one side of the clamping member, for mounting the latch to the first structure member and for rotatably journaling the fastener latch through partial rotation therearound; and

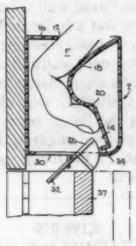


(c) handle means for rotatable manipulation of the latch around an axis of the journal means.

4,198,084
SAFETY DOOR LOCK

Frank A. Trotta, New York, N.Y., assignor to General Safety Corporation, Greenwich, Conn.

Filed Nov. 7, 1978, Ser. No. 958,509
Int. Cl.[2] E05C 3/04
U.S. Cl. 292—209 12 Claims



1. A safety lock for a door comprised of:

a housing member;

a hingedly mounted actuator lock fully contained within the housing adapted for movement between a locked and unlocked position;

a pressure surface on the actuator lock member against which an adult's finger can bear to rotate the actuating lock member about the hinge;

an opening in the housing sufficiently remote from the pressure surface on the actuator lock member to afford access to the pressure surface by an adult's finger but not a child's finger; and

a stop member rotatably mounted on the housing having a first reaction surface in registry with a surface of the actuator lock member when the actuator lock member is in the locked position and a second stop surface essentially normal to the first surface which second surface of the stop member is aligned with the path of travel of the door to be locked.

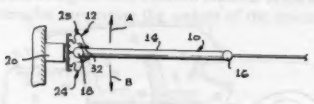
4,198,085
GATE LATCH

Robert I. Schacter, Hidden Hills, Calif., assignor to Max Geldin, Studio City, Calif., a part interest

Filed Aug. 2, 1978, Ser. No. 930,347
Int. Cl.[2] E05C 3/06
U.S. Cl. 292—217 9 Claims

1. A gate latch for a vertically hinged two-way swinging gate, said gate latch being mounted on a gate post, comprising a pair of latch members positioned adjacent each other and

adapted to engage therebetween a vertical end member of said gate to maintain same in latched position, said latch members each being in the form of leaves having an outer curved edge, and being inwardly shaped to provide a space between said leaves to receive said vertical end member of said gate in latched position, and support means mounting said leaves in a normal substantially horizontal latching position, means for pivotally mounting each of said leaves for rotation thereof from a latched position upwardly to an unlatched position, said means comprising a pivot rod positioned transversely across said leaves, a mounting plate, means mounting said pivot rod



on said mounting plate, latch actuating means mounted transversely of said latch members, said latch actuating means comprising an actuating lever mounted on said mounting plate above said leaves in their normal substantially horizontal position, a pivot pin for said lever to pivot said lever on an axis perpendicular to the axis of said pivot rod, contact members on said actuating lever and adapted to contact the rear portion of said leaves to the rear of said pivot rod, and to selectively rotate one or the other of said leaves upwardly to an unlatched position by manual actuation of said lever upwardly or downwardly from either side of said gate latch.

4,198,086

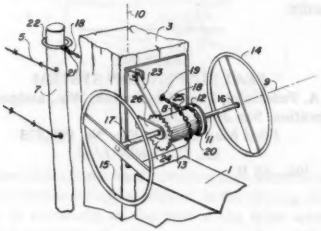
GATE LATCHING DEVICE

LaVerne D. Machacek, Box 304, Eureka, Nev. 89316

Filed Mar. 6, 1978, Ser. No. 883,737

Int. Cl.² E05C *17/36*

U.S. Cl. 292—246 **2 Claims**



1. A combination of a fence having a pair of spaced fence posts defining a gate area and a gate having spaced first and second gate posts, the first gate post being hingedly affixed to one of the fence posts and the second gate post being next-adjacent the other of the fence posts when the gate is closed; and

a gate latching device comprising a drum rotatably mounted on the other of the fence posts for rotation about its axis, the axis of the drum being perpendicular to the axis of said fence post, a rod extending coaxially through the drum and beyond the opposite ends thereof and affixed to said drum, a pair of turning wheels each affixed to a corresponding end of the rod to facilitate manual rotation of the drum, a length of chain extending through a bore formed through said other of said fence posts and having mutually spaced opposite first and second ends, the first end of the chain being affixed to the drum whereby said chain is selectively windable on the drum and unwindable from said drum, and a ring affixed to the second end of the chain and fitable around the second gate post of the gate whereby when the ring is positioned around said second gate post and the drum is rotated the gate is closed.

4,198,087

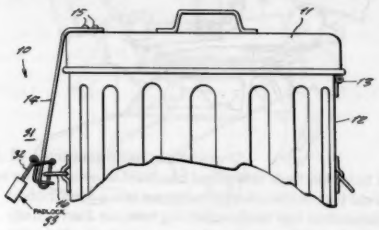
CATCHING DEVICE FOR COVER OF GARBAGE OR REFUSE CAN

John R. Cornell, and George Spector, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Mar. 9, 1976, Ser. No. 665,238

Int. Cl.² E05C *19/06*

U.S. Cl. 292—246 **2 Claims**



1. In a latch-n-lock, the combination of a refuse can, a cover pivotally connected by a hinge upon said can, and a latch device for securing said can in a closed position, said latch comprising a long metal bar riveted at one end upon said cover, an opposite end of said bar being downwardly bent and positioned in front of a handle on a side of said can, a lower end of said bar having a U-shaped loop, a terminal edge of said lower end pivotally supporting a wire member about a U-shaped central section thereof, opposite ends of said wire member being each similarly bent and configurated and including a loop adjacent said U-shaped center section, said loops being axially aligned and spaced apart, a U-shaped mouth adjacent each loop and a thumb and finger rest adjacent each said mouth.

4,198,088

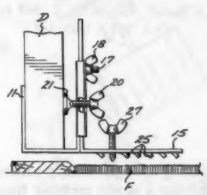
REMOVABLE DOOR LOCK

Joe I. Tochihara, 4586 Everest Cir., Cypress, Calif. 90630

Filed Sep. 22, 1978, Ser. No. 944,774

Int. Cl.² E05C *19/18*

U.S. Cl. 292—288 **3 Claims**



1. A door securing device adapted to oppose the opening of a door comprising:

a U-shaped clamp conformed to engage the edge of said door said clamp including one vertical surface provided with outwardly directed inturned lips along two parallel edges thereof;

clamping means for releasably securing said clamp to said door;

an L-shaped bracket having a vertical leg conformed for insertion between said inturned lips and a horizontal leg provided with a plurality of V-shaped cuts each forming a

tooth-like structure turned out of the plane of said horizontal leg; and

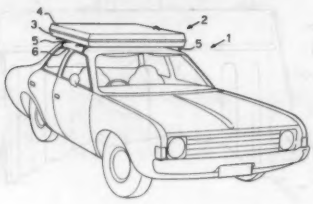
adjusting means for selectively securing said bracket relative said clamp.

4,198,089

CAMPING UNIT

Ioannis Vafiadis, 49 Caruso Crescent, Brahma Lodge, Australia (5109)

Filed Oct. 20, 1977, Ser. No. 843,797
Claims priority, application Australia, Nov. 9, 1976, 8064/76
Int. Cl.[2] B60P *3/32*; B60R *15/00*
U.S. Cl. 296—165 **8 Claims**



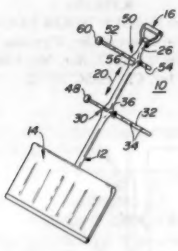
1. An improved camping unit for attachment to the roof portion of a vehicle, said unit comprising a base adapted to be secured to the roof portion of a vehicle, a structurally rigid lid connected to said base by linkage means such that the lid can be swung downwardly as an integral unit to be situated generally vertically adjacent to but spaced from the vehicle thus forming a side wall of an enclosed space adjacent the vehicle, said linkage means supporting the now upper edge of the lid from the base.

4,198,090

SHOVEL

David Gutman, 447 Mercy St., Philadelphia, Pa. 19108

Filed Aug. 29, 1978, Ser. No. 937,855
Int. Cl.[2] A01B *1/22*; B25G *1/04*
U.S. Cl. 294—58 **9 Claims**



1. A shovel including a longitudinally extended handle member, said shovel having a scoop member fixedly secured to a first end of said handle member and a gripping member fixedly secured to a second end of said handle member, wherein the improvement comprises:

(a) adjustable lever means releasably secured to said extended handle member for providing an adjustable lever height above a base surface when said scoop member is in contact with said base surface, said lever means including a lever member passing through said handle member and being releasably securable thereto at a plurality of positional locations on said lever member; and,

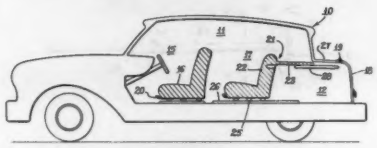
(b) adjustable grip means releasably secured to said extended handle member, said adjustable grip means extending above said handle member for providing a secondary gripping portion for a user.

4,198,091

VEHICLE WITH SPACE TRADEABLE BETWEEN REAR SEAT AND TRUNK

Arthur I. Appleton, c/o Appleton Elec. Co., 1701 Wellington Ave., Chicago, Ill. 60657

Filed Jul. 13, 1978, Ser. No. 924,443
Int. Cl.[2] B60N *1/10*
U.S. Cl. 296—63 **2 Claims**



1. In a self propelling vehicle having an enclosed passenger compartment and an enclosed storage compartment therebehind, said passenger compartment including a front portion containing seating and a rear portion sufficiently large to carry at least one passenger, the improvement comprising:

forwardly and rearwardly translatable, combination partition and seat means interposed between said rear portion and said storage compartment for selectively allowing a substantially linear redistribution of the volume between said rear portion and said storage compartment as said combination means are moved forwardly and rearwardly, the seat part of said combination means being shaped to conform to a seated passenger as well as facing forwardly and being situated behind said front portion seating, whereby a vehicle occupant has the option of trading rear passenger leg room for increased trunk space and vice versa without substantially changing the configuration of the seat part of the combination means;

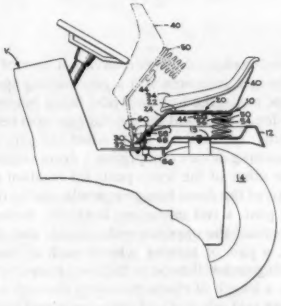
and cooperating means attached to said vehicle and to said combination means for selectively and incrementally moving said combination means forwardly and rearwardly.

4,198,092

SEAT SUSPENSION SYSTEM

Joseph A. Federspiel, Port Washington, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed May 1, 1978, Ser. No. 889,473
Int. Cl.[2] B60N *1/02*
U.S. Cl. 296—65 R **9 Claims**



1. A seat suspension system for a vehicle comprising; a rigid seat supporting plate having a rigid substantially horizontal seat supporting portion and a downwardly inclined forward

portion when the seat is in an operator supporting position, means for pivotally connecting the forward end of the plate to the vehicle, a seat connected to said rigid seat supporting portion of the plate, a spring connected to said rigid seat supporting portion of the plate and adapted to abut a portion of the vehicle remote from the forward end of said plate, and means for independently adjusting the seat and the spring relative to and in the same plane as said rigid seat supporting portion in a direction longitudinally of the vehicle into pluralities of adjusted positions for comfortably supporting operators of different heights and weights, said spring being of predetermined strength and being the only resilient member in the seat suspension system for supporting the weight of the operators.

4,198,093

MOTORCYCLE COVERING

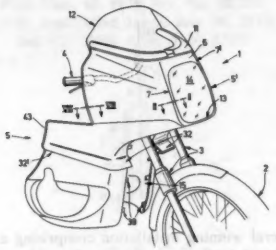
Hans-Albrecht Muth, Hechendorf; Rudolf Stark, Poing; Hans-Günther v. d. Marwitz, Munich; Peter Hundemer, Puchheim; Heinz Estel, Munich, and Dirk Reissig, Schweitenkirchen, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed May 24, 1977, Ser. No. 799,966

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2624851

Int. Cl.[2] **B62J** *17/02*

U.S. Cl. 296—78.1 **46 Claims**



1. Multipart full wraparound covering for a motorcycle with lateral cover means which, as viewed in the driving direction, are drawn in essentially to the rear of the front wheel to a distance that corresponds approximately to the width of the front wheel fork, characterized in that:

(a) the lateral cover means are detachably connected with each other in their upper zone by way of an intermediate member;

(b) the lateral cover means are reinforced along the upper edge with a profile member connected to the intermediate member;

(c) the lateral cover means are connected, up to the lower edge close to the bottom adjacent to the intermediate member, with a closure plate means, said closure plate means bridging a central opening between the lateral cover means and being constructed with cooling air slots; and

(d) the full wraparound covering having a multipart spoiler means with at least one part on each of the lateral cover means and one part on the closure plate means, which parts are directed obliquely downwardly and outwardly from the motorcycle.

4,198,094

WORKING CHAIR

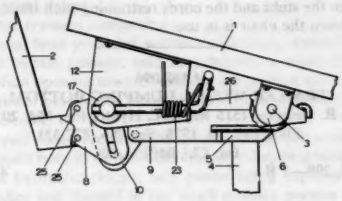
Anders Bjerknes, Ranunkelveien, 3A Oslo 8, and Ruedi a Porta, St. Olavsgt. 7, Oslo 1, both of Norway

Filed August 22, 1978, Ser. No. 935,417

Claims priority, application Norway, Aug. 25, 1977, 772943

Int. Cl.[2] **A47C** *1/00*

U.S. Cl. 297—306 **9 Claims**



1. In a working chair including:

an underframe; at least one horizontal shaft mounted in said underframe; a seat member pivotable about said horizontal shaft; a back member pivotable about said horizontal shaft; releasable locking means for fixing said seat and back members in a chosen position relative to each other, said locking means comprising a first number of friction plates connected to said underframe, a second number of friction plates connected to said back member, and clamping means for clamping together said first and second numbers of friction plates; the improvement comprising:

(a) support means for supporting said first number of friction plates at a distance from said horizontal shaft;

(b) a back member carrier fixed to said back member for supporting said second number of friction plates;

(c) a holder attached to the underside of said seat member, said clamping means being mounted in said holder; and

(d) spring-actuated handle means mounted in said holder and normally urged against said clamping means to clamp said numbers of friction plates in a desired relative position, said handle means being manually operable to unclamp said clamping means to permit repositioning of said plates.

4,198,095

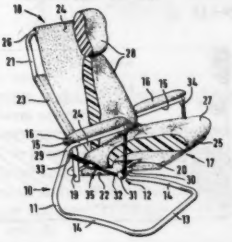
ADJUSTABLE RECLINING CHAIR

David J. Wicks, Moat Farm, Earl Stonham, Stowmarket, Suffolk, England

Filed Feb. 2, 1978, Ser. No. 874,617

Int. Cl.[2] **A47C** *1/02*

U.S. Cl. 297—320 **12 Claims**



1. An adjustable chair comprising a frame, a back-rest and a squab, a hinged connection being arranged between the adjacent edges of the back-rest and squab and the frame pivotally mounting the back-rest at a location spaced from said hinged connection to the squab, there being two stubs projecting one

from each side of the squab respectively and spaced from said hinged connection, and two cord members for supporting the squab, the cord members being provided one to each side of the squab and associated with one stub respectively, the ends of each cord member being attached to the frame at locations spaced in the front-to-back direction of the squab and passing with at least one turn around the associated stub, so that the angle of the back-rest and squab relative to the frame may be adjusted by sliding the stubs along the cord members, friction between the stubs and the cords restraining such sliding movement when the chair is in use.

4,198,096

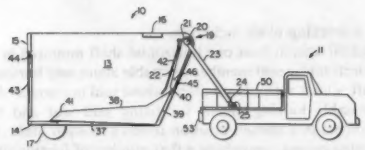
TRAILER WITH A DUMPING BOTTOM

George R. Oelberg, 1515 Ray Rd., Hyattsville, Md. 20782

Filed Feb. 13, 1978, Ser. No. 877,331

Int. Cl.² B60P *1/08*

U.S. Cl. 298—1 B **4 Claims**



1. A trailer vehicle comprising a frame including a pair of opposed upright members at the front end thereof and a bottom support means, a torque arm assembly pivotally mounted between said frame upright members, a bottom slideably and pivotally supported upon said bottom support means and having a front portion pivotally connected to said torque arm assembly, said torque arm assembly being pivotable between a first position in which said bottom is substantially horizontal and a second position in which said bottom front portion is raised so that said bottom is inclined downwardly toward the rear end of the frame, said torque arm assembly comprising a cross-bar pivotally mounted between said upright members and a pair of torque arms extending radially from said cross-bar toward the front portion of said bottom when said bottom is in the horizontal position, and a mounting post extending radially from said cross-bar forwardly of the trailer vehicle at an acute angle from said torque arms, said mounting post having a free end and means on said free end for pivotally and rotatably connecting said mounting post to a tractor truck.

4,198,097

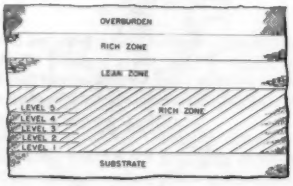
METHOD OF MINING

F. Frederick Fondriest, Lake Forest, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Jun. 6, 1977, Ser. No. 803,730

Int. Cl.² E21C *41/10*

U.S. Cl. 299—11 **13 Claims**



1. A method of mining a seam of rigid hydrocarbonaceous containing mineral such as oil shale or coal, whereby the seam is apportioned into working horizons and each selected horizon is mined separately for essentially complete recovery of the mineral deposit, which comprises the steps of:

(a) extracting from about 15 to about 85 percent of the mineral in a first selected horizon using a room and pillar mining technique;

(b) filling the void areas resulting from the operation of step (a) with concrete;

(c) extracting the remaining mineral pillars for essentially complete recovery in the first selected horizon of the hydrocarbonaceous values;

(d) filling the void areas resulting from the operation of step (c) with concrete; and

(e) repeating the above steps on each subsequently selected horizon for essentially complete recovery of the entire mineral deposit.

4,198,098

MINERAL WINNING INSTALLATIONS

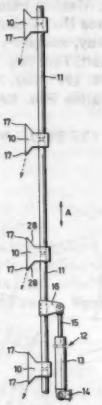
Armin Löbbe, Oberaden, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Oct. 12, 1978, Ser. No. 950,839

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751199

Int. Cl.² E21C *27/40*

U.S. Cl. 299—34 **14 Claims**



1. A mineral winning installation comprising a plurality of separable plough bodies spaced-apart alongside a mineral face, nozzles for emitting a high-pressure fluid from each of said plough bodies and means for moving the bodies in unison back and forth alongside the mineral face with each body only acting over a region of the mineral face.

4,198,099

BRAKING PRESSURE CONTROL UNIT FOR VEHICULAR HYDRAULIC BRAKE SYSTEMS

Heinrich Oberthür, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to ITT Industries, Incorporated, New York, N.Y.

Filed Sep. 20, 1978, Ser. No. 944,056

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 2744407

Int. Cl.² B60T *8/26*

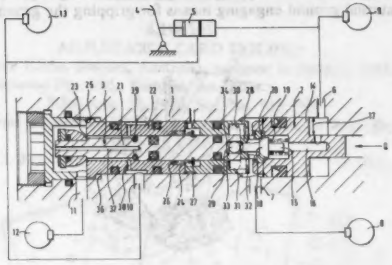
U.S. Cl. 303—6 C **8 Claims**

1. A braking pressure control unit for vehicular hydraulic brake systems in which brakes at rear wheels of a vehicle are pressurized by two separate brake circuits comprising:

a first pressure control valve having a longitudinal axis controlling a first pressure medium connection between a pressure medium source and one of said two brake circuits, said first valve including a stepped piston and a first

closing member disposed internally of said stepped piston and coaxial of said axis;

a second pressure control valve disposed coaxial of said axis, in series with said stepped piston and adjacent said first closing member, said second valve controlling a second pressure medium connection between said source and the



other of said two brake circuits, said second valve including a second closing member coaxial of said axis and supported by said stepped piston; and

a stop disposed internally of said second valve and abutting said first closing member to keep said first closing member in its open position when said unit is in its rest position.

4,198,100

HYDRAULIC BRAKE PRESSURE CONTROL DEVICE FOR VEHICLES

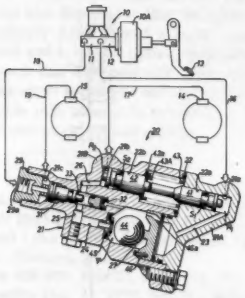
Tomoyuki Nogami, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 13, 1979, Ser. No. 20,100

Claims priority, application Japan, Jun. 30, 1978, 53/80055

Int. Cl.[2] B60T *8/14, 8/24, 8/26*

U.S. Cl. 303—6 C **4 Claims**



1. In an hydraulic brake pressure control device for incorporation in a vehicle braking system including a tandem master cylinder, a first hydraulic circuit connecting a first pressure chamber of said master cylinder to front wheel brake cylinders, and a second hydraulic circuit connecting a second pressure chamber of said master cylinder to rear wheel brake cylinders, which comprises:

a housing for interposition within said second hydraulic circuit, said housing being provided with (a) an inlet port for connection to the second pressure chamber of said master cylinder, (b) an outlet port for connection to said rear wheel brake cylinders, (c) a valve chamber communicating at one end thereof with said inlet port and at the other end thereof with said outlet port, and (d) a bypass passage communicating between said valve chamber and said outlet port to permit the escape of air from said valve chamber; and

a cut-off valve assembly including (a) a valve seat provided in said valve chamber to permit the flow of fluid between said inlet and outlet ports, and (b) an inertia-controlled valve element located within said valve chamber to co-operate with said valve seat to interrupt the flow of fluid from said inlet port to said outlet port when said valve element is subjected to a deceleration in excess of a predetermined value;

the improvement comprising:

a stepped bore provided within the housing coaxially with said bypass passage, said bore having a small diameter portion opening towards said bypass passage and a larger diameter portion for interposition within said first hydraulic circuit;

a stepped piston reciprocable in a limited stroke within said stepped bore to form a fluid chamber disposed within said first hydraulic circuit, said piston being exposed at the smaller end thereof in the small diamter portion of said bore and at the larger end thereof in said fluid chamber;

a check valve including a second valve seat provided in the small diameter portion of said bore to permit the flow of fluid through said bypass passage, and a valve element reciprocable within the small diameter portion of said bore to co-operate with said second valve seat to open and close said bypass passage; and

resilient means interposed between said valve element and said piston to engage said valve element with said second valve seat when said piston is moved towards said bypass passage due to the pressure in said fluid chamber.

4,198,101

LOAD RESPONSIVE BRAKE FORCE REGULATOR

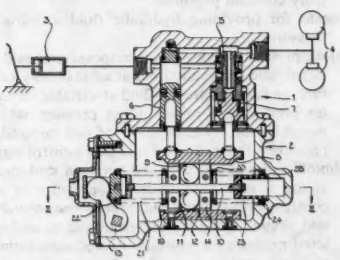
Heinrich Oberthür, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to ITT Industries, Incorporated, New York, N.Y.

Filed Jul. 28, 1978, Ser. No. 928,653

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1977, 2743191

Int. Cl.[2] B60T *8/26*

U.S. Cl. 303—22 R **4 Claims**



1. A load-responsive brake-force regulator for a vehicular hydraulic brake system comprising:

a balance beam having one lever arm coupled to an actauting piston exposed to pressure coming from a master cylinder and the other lever arm coupled to a control piston which actuates a control valve disposed in a pressurized-fluid line leading from said master cylinder to wheel brakes at a rear axle of a vehicle;

a pair of rollers held in a guide cage, one of said pair of rollers supporting and moving with rolling contact on said balance beam and in rolling contact with an actuating tongue and the other of said pair of rollers in rolling contact with said actuating tongue and in rolling contact with a rail, said actuating tongue being moved dependent

on a control force proportional to the instantaneous distribution of the axle-load of said rear axle; and

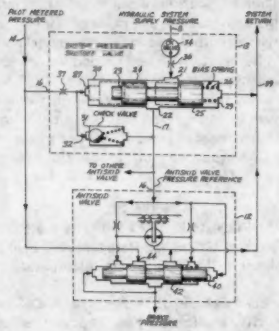
a pair of compression springs, one of said pair of compression springs being disposed coaxial of said actuating tongue and extending between one side of said guide cage and a first stop on said actuating tongue adjacent a point of application of said control force to said actuating tongue and the other of said pair of compression springs being disposed coaxially of said actuating tongue and extending between the other side of said guide cage and a second stop formed in a housing for said brake-force regulator remote from said point of application of said control force.

4,198,102

AUTOMATIC SYSTEM PRESSURE SHUT OFF VALVE FOR ANTI-SKID CONTROL SYSTEM

Garrett H. DeVlieg, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 10, 1978, Ser. No. 949,597
Int. Cl.[2] B60T *8/02*
U.S. Cl. 303—92 **2 Claims**



1. A vehicle skid control system comprising:

a skid control circuit for providing a skid control signal;

means for providing a supply of hydraulic fluid at substantially constant pressure;

means for providing hydraulic fluid at variable metered pressure;

brake pressure valving means responsive to said skid control signal, said hydraulic fluid at substantially constant pressure, and said hydraulic fluid at variable metered pressure for producing a brake output pressure which is determined by the lower of either of said metered pressure or pressure commanded by said skid control signal; and,

shutoff valve means disposed between said means for providing a supply of hydraulic pressure at substantially constant pressure and said brake pressure valving means, said shutoff valve means responsive to said variable metered pressure for shutting off said substantially constant pressure applied to said brake pressure valving means when said variable metered pressure is less than a predetermined level.

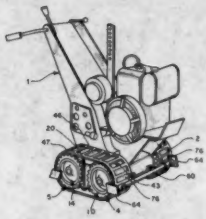
4,198,103

DIFFERENTIAL TRACK ASSEMBLY FOR A CABLE LAYING MACHINE

Eugene A. Ward, 1431 Bullis Rd., Elma, N.Y. 14059, and Gerald G. Ward, 8 S. 290 Murray Dr., Naperville, Ill. 60540

Continuation-in-part of Ser. No. 663,478, Mar. 3, 1976, abandoned. This application Mar. 30, 1978, Ser. No. 891,509
Int. Cl.[2] B60S *1/62*; B62D *55/24*
U.S. Cl. 305—12 **14 Claims**

1. A track drive for a machine having front and rear traction wheels at least certain of which are driven, said drive comprising: an endless belt trained about said wheels and having a flat, smooth interior drive-transmitting surface in frictional engagement with the peripheral surfaces of said front and rear wheels, said surfaces of the wheels and belt surfaces having predetermined torque transfer capacity and being slippable beyond said capacity, and said wheels having discretely spaced drive transmitting areas providing limited slippable contact between said wheel and belt surfaces, and said belt having a plurality of external ground engaging means for gripping the ground during traverse of the belt over the terrain, said areas and means being proportioned to permit slippage between the driven wheels beyond a certain torque limit and the belt while said means on the belt grip the terrain, and said spaced drive transmitting areas of said wheels comprising a plurality of pads spaced axially and circumferentially of the respective wheels and providing limited areas of engagement with the belt surface, and defining spiraled passages about the wheels for sifting dirt.

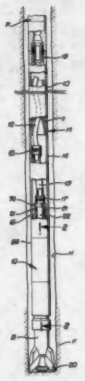


4,198,104

ADJUSTABLE STACKED BEARING ASSEMBLY

Gary M. Crase, Cypress, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jun. 9, 1978, Ser. No. 914,271
Int. Cl.[2] F16C *17/04, 19/04*
U.S. Cl. 308—139 **17 Claims**



1. A bearing assembly for use with a fluid motor having a stator and a rotor comprising: a shaft connectable at one end to said rotor; a housing about said shaft and connectable at one end to said stator; a plurality of bearing sub-assemblies in thrust transfer relation between said shaft and said housing to transmit thrust in one direction, each sub-assembly including means providing thrust transfer elements on said shaft and in said housing; and means axially adjustably mounting the respective thrust transfer elements on said shaft to eliminate clearance in the respective sub-assemblies; and including another bearing sub-assembly in thrust transfer relation between said shaft and said housing to transmit thrust in the other direction, said

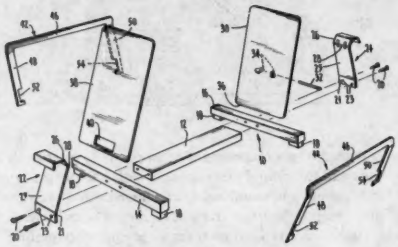
another sub-assembly having thrust transfer elements on said shaft and in said housing; means axially adjustably mounting said thrust transfer element of said another sub-assembly on said shaft to eliminate clearance in said another sub-assembly; said another sub-assembly including spring means preloading said first-mentioned sub-assemblies.

4,198,105

ADJUSTABLE CARD HOLDER

Bronwen Gibbs, Somers, Australia, assignor to Modern Office Equipment Pty. Ltd., Victoria, Australia

Filed Aug. 25, 1978, Ser. No. 936,895
Claims priority, application Australia, Aug. 26, 1978, PD1416
Int. Cl.² A47F 7/00
U.S. Cl. 312—183 **10 Claims**



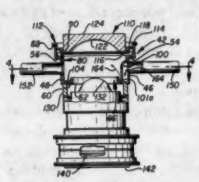
1. An adjustable holder for flat articles comprising a frame having a pair of spaced transverse end members and a longitudinal member therebetween whereby said members form an H shape, a fixed first bracket mounted on one said end member and a fixed second bracket mounted on said other end member, a first plate mounted on said first bracket for limited pivotal movement about a generally horizontal plane, a second plate mounted on said longitudinal member, said second plate having an aperture near the lower edge thereof, said aperture being of such shape and dimensions that the plate is readily adjustable longitudinally when placed at right angles to said longitudinal member and is locked against longitudinal movement when tilted such that the upper and lower edges of said aperture engage the upper and lower surfaces of the longitudinal member, and side rails adjustably mounted on said frame for limiting lateral movement of said articles.

4,198,106

METHOD OF MANUFACTURING A PHOTOCATHODE FOR AN IMAGE INTENSIFIER TUBE

Grady K. Stowe, and Lynn E. Paul, both of Dallas, Tex., assignors to Varo, Inc., Garland, Tex.

Division of Ser. No. 880,019, Feb. 21, 1978, Pat. No. 4,157,484.
This application Dec. 21, 1978, Ser. No. 971,711
Int. Cl.² H01J 9/12
U.S. Cl. 316—4 **2 Claims**



1. A method for forming a photocathode internally processed image intensifier inverter tube comprising:

forming a photocathode housing having a cylindrical outer wall defining a cylindrical cavity in which the photocathode is received,

forming a pair of flat wall surfaces along the circumference of the outer side wall, said flat wall surfaces positioned at a radial distance from the center of the photocathode housing less than the radius of the outer wall of the housing,

forming an aperture through each of the flat wall surfaces in the outer side wall,

forming an indention in one side of a circular shield,

inserting the circular shield within the outer wall of the photocathode housing such that the indention is adjacent one of the apertures in the flat surface of the outer side wall,

attaching an alkali vapor generator source through tubular side arms to the aperture adjacent the indention,

attaching an antimony metal vapor source through tubular side arms to the other aperture in the outer side wall,

admitting the antimony metal vapor into the cathode housing for deposit onto the photocathode,

admitting the alkali metal vapor into the photocathode housing for deposit onto the photocathode,

crimping the side arms through which the alkali metal vapor and the antimony metal vapor are admitted into the cathode housing at a point not extending beyond the diameter of the cathode housing. outer side walls of the cathode housing, and

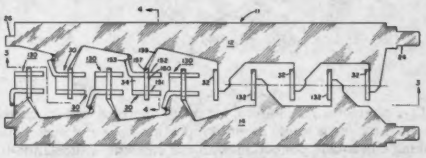
sealing said crimped ends such that the arms do not extend beyond the diameter of the outer side walls of the cathode housing.

4,198,107

INTEGRAL BUS BAR CONTACT STAB STRUCTURE

Roger D. Luke, Norcross, and John M. Rhodes, Atlanta, both of Ga., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Sep. 15, 1978, Ser. No. 942,625
Int. Cl.² H02B 1/20
U.S. Cl. 339—22 B **10 Claims**



1. A bus bar contact stab structure formed integrally from a single sheet of conductive material, said structure including an elongated bus bar section located in a main plane and a stab unit section laterally offset from the longitudinal axis of said bus bar section, said stab unit section including first and second unitary planar stab sections extending forward of said main plane and disposed in spaced parallel first and second planes perpendicular to said main plane and parallel to said axis, said stab unit section also including a planar central stab portion extending forward of said stab sections and positioned in a third plane perpendicular to said first and second planes, each of said stab sections including first and second stabs positioned on opposite sides of said third plane.

4,198,108

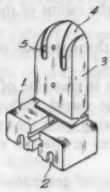
SOCKET FOR FLUORESCENT LAMP

Mario F. Bassetto, 1230 Presidente Wilson Ave., Sao Paulo, Brazil

Filed Nov. 13, 1978, Ser. No. 959,818
Claims priority, application Brazil, Feb. 27, 1978, 5800225[U]
Int. Cl.² H01R 33/08
U.S. Cl. 339—50 R **9 Claims**

1. An improved socket, particularly for a fluorescent lamp, of the type including a base, a casing having guide passages for

inserting therein the contact pins of the lamp, holes adjacent to the guide passages and communicating therewith, said holes being operative for receiving therein power terminals, and resilient means for maintaining the terminals in a desired posi-



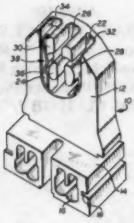
tion relative to the contact pins of the lamp inserted in the guide passages of the casing, wherein the improvement comprises means integrally connecting said base to said casing so that said casing is tiltable relative to said base within a limited tilting range.

4,198,109

BI-PIN FLUORESCENT LAMPHOLDER AND CONTACT

George Ustin, Croton-on-Hudson, N.Y., assignor to North American Philips Corp., New York, N.Y.

Continuation-in-part of Ser. No. 814,404, Jul. 11, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 6,042
Int. Cl.[2] H01R *33/08*
U.S. Cl. 339—50 R 19 Claims



1. A contact for a lampholder consisting of a unitary metal element, having a single mounting portion only and means for making electrical connection with the element; a substantially planar section, defining a plane, at least a portion of said planar section being said single mounting portion; and a pin-contacting section extending in a longitudinal direction from said substantially planar section toward and past a pin-contacting region; wherein said longitudinal direction is parallel to said plane defined by the substantially planar section, and said pin-contacting section is perpendicular to said plane.

4,198,110

CONNECTOR

Harold B. Wetmore, Needham; Robert A. Harrow, Sudbury, and William C. Holway, Acton, all of Mass., assignors to General Energy Development Corp., Needham, Mass.

Filed Jun. 8, 1978, Ser. No. 913,645
Int. Cl.[2] H01K *13/30;* H01R *13/44*
U.S. Cl. 339—89 R 8 Claims

1. An explosion-proof connector for coupling to sections of a multi-wire cable comprising;

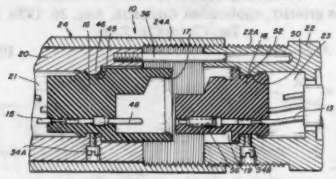
an insulative receptacle for supporting male contact pins coupling to the wires of one section of cable, said receptacle having a cavity with the pins extending into the cavity terminating short of the end wall of the receptacle,

an insulative plug for supporting female contact sockets coupling to the wires of another section of the cable, said plug having a protruding end matched to the receptacle cavity to fit tightly therewith in explosion-proof contact therebetween, the plug having the sockets imbedded therein,

a receptacle housing for receiving the insulative receptacle,

means for locking the receptacle in the receptacle housing in a fixed predetermined position relative to the receptacle housing including at least one locking screw, said receptacle housing having means for receiving said screw with the head of the screw accessible from external of said housing and recessed,

means associated with said housings for providing rotational alignment therebetween,



and sleeve means extending at least partially over both housings and threadingly engageable with one of said housings for causing and maintaining engagement between the plug and receptacle when the sleeve means is tightened,

the sleeve means having threads at one end mating with threads of said one housing and means at the other end securing the sleeve means substantially stationary with the other housing,

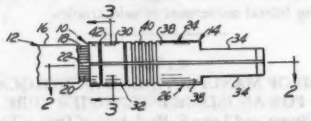
said sleeve means, in the tightened locked position, covering both locking screws associated with both housings.

4,198,111

MEANS AND METHOD OF SECURING WELDING CABLE CONDUCTORS TO THEIR TERMINAL COMPONENTS

Glenn A. Cappel, Flat Rock, Mich., assignor to Nu-Core, Inc., Romulus, Mich.

Filed May 30, 1978, Ser. No. 910,273
Int. Cl.[2] H01R *13/00*
U.S. Cl. 339—112 L 1 Claim



1. A welding cable terminal component adapted to be secured to one end of a rope-like multiple-wire welding cable conductor, said terminal comprising

an elongated terminal component body having a forward portion adapted to be connected to a welding apparatus and a rearward portion adapted to be secured to the welding cable conductor,

said terminal component body having a partly cylindrical outer side with a partly cylindrical peripheral groove therearound,

said terminal component body having a substantially flat inner side with a longitudinal cooling liquid channel therein and having in said rearward portion a recess configured to receive the end of the welding cable conductor and communicating at its opposite ends with the opposite ends of said groove,

and a welding cable conductor clamping grip comprising an endless band extending completely around said rearward body portion and having a partly cylindrical outer periph-

eral portion configured to fit said groove in mating relationship therewith,

said clip having an inner approximately chordal portion extending across said recess and adapted to be deformed into compressing engagement with the end of the welding cable conductor disposed in said recess,

said peripheral groove having substantially the same width as said clip and defining a cooling liquid passageway communicating with said channel.

4,198,112

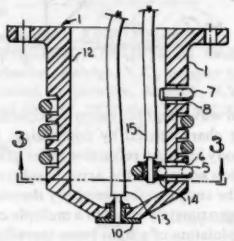
TORQUE LIMITED MALE SCREW BASE FOR LAMPHOLDER FITTING

Jack V. Miller, 700 N. Auburn Ave., Sierra Madre, Calif. 91024

Filed Sep. 21, 1978, Ser. No. 944,390

Int. Cl.[2] H01R *11/02*

U.S. Cl. 339—176 L **7 Claims**



1. A male screw base for a lampholder fitting comprising:

a generally cylindrical, electrically insulative, hollow body having a helical groove in its cylindrical surface;

a slot at each end of the helical groove in the body which extends into the hollow interior of the body;

an electrically conductive helical spring loosely disposed whithin the helical groove and having a major diameter and pitch approximately equal to the major diameter and pitch of a female Edison base lampholder;

each end of the helical spring bent inwards, passing through the respective slots in the helical groove, and extending into the hollow interior of the body;

a center electrical contact disposed coaxially at one end of the cylindrical body;

means for attachment to a lampholder fitting provided at the second end of the cylindrical body;

an electrical conductor attached to one end of the helical spring and passing through the insulative body to extend from the attachment end of the body, suitable for electrical connection to a lampholder fitting; and

a second electrical conductor attached to the center contact and passing through the body to extend fron the attachment end of the body, suitable for connection to a lampholder fitting.

4,198,113

TERMINAL MEMBER

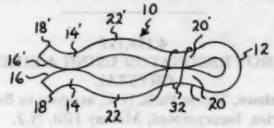
James J. Grady, Somerworth, N.H., assignor to General Electric Company, Somerworth, N.H.

Filed Nov. 1, 1976, Ser. No. 737,677

Int. Cl.[2] H01R *13/40*

U.S. Cl. 339—221 R **4 Claims**

1. A terminal member for securing electrical wire to a device which is self-aligning and self-locking upon entry into an appropriately sized recess, comprising an elongated metal body shaped to a substantially symmetrical configuration having a bend therein of approximately 180° and a pair of generally parallel leg sections extending from said bend which are in adjoining contact with each other along portions of their lengths and each leg section terminating with an upward projecting resilient flared portion directed opposite from each other for resiliently gripping the walls of a recess, both of said parallel extending leg sections each having formed therein a laterally bowed portion projecting in the same direction at a location approximately adjacent to the bend and thereby forming a depression for receiving an electrical conductor wire, and



each leg section having a bowed section projecting outwardly apart from the other at a location approximately adjacent the terminating flared portion and thereby forming an outward expansion for aligning the terminal member upon entry into a recess.

4,198,114

MAGNIFYING OPTICAL SYSTEM

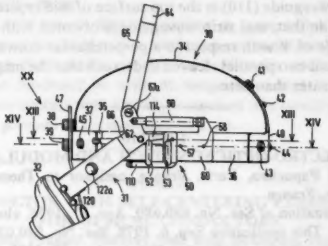
Walter Zapp, Oberegg, Switzerland, assignor to Createchnic Patent AG, Dietlikon, Switzerland

Filed Jan. 24, 1978, Ser. No. 871,800

Claims priority, application Switzerland, Jan. 26, 1977, 916/77

Int. Cl.[2] G02B *23/02*

U.S. Cl. 350—36 **22 Claims**



1. Magnifying optical system comprising a head gear **(30)**, a microscope **(32,33)** comprising an objective **(10)**, an ocular having an eye lens **(20)** and a deflecting set **(11** to **14)** interposed between said objective **(10)** and said eye lens **(20)** and a counter weight **(64)** by means of which said microscope is suspended with balancing of the microscope weight, said microscope being rigidly connected with said head gear in such a position that an object field observed by the eye of a user wearing said head gear through said microscope can also be observed, in an unchanged position of the user's head, past the microscope by a mere changing of the viewing direction comprising the axis of the viewer's eye ball, and being guidable via said head gear **(30)** by a user's head;

said optical system further comprising an instrument part **(31)** comprising an adjusting device **(122*a,b*)** and provided at said head gear, by means of which adjusting device the distance of the user's pupil from said eye lens **(20)** is adjustable, while said counter weight **(64)** is rigidly connected with said instrument part **(31)**, whereby said microscope, instrument part **(31)** and counter weight **(34)** constitute a swivel unit being mounted on said head gear for swivelling between two terminal positions, in one of which positions said eye lens **(20)** is in front of the user's eye at the aforesaid adjusted distance, while, in the other terminal position, the microscope is outside the vision field of the user;

said system also comprising damping means (50,51) adapted for damping the swivelling motion of said swivel unit while the latter approaches either one of said terminal positions, permitting swivelling of said swivel unit from one of said terminal positions into the other by a nod of the user's head;

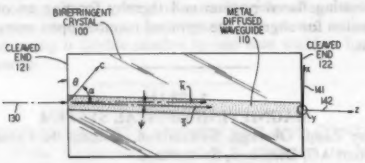
and wherein said deflecting set is free from prisms.

4,198,115

FABRY-PEROT RESONATOR USING A BIREFRINGENT CRYSTAL

Ivan P. Kaminow, Tinton Falls, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 16, 1978, Ser. No. 934,172
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.14 10 Claims



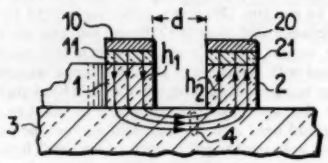
7. A Fabry-Perot resonator comprising a birefrigent crystal (100) having at least two parallel cleaved ends and a c axis that lies in a plane parallel to the top surface of said crystal, and a strip waveguide (110) in the top surface of said crystal, characterized in that, said strip waveguide is oriented with its axis at an angle of Ψ with respect to a perpendicular drawn to either one of sid two parallel cleaved ends, such that the magnitude of Ψ is greater than zero.

4,198,116

ELECTRO-OPTICAL SWITCH AND MODULATOR

Michel Papuchon, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 680,680, Apr. 27, 1976, abandoned. This application Sep. 6, 1978, Ser. No. 940,039
Claims priority, application France, Apr. 30, 1975, 75 13618
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.14 10 Claims



1. An electro-optical switch for switching radiant energy between a first and a second optical circuit under the control of a voltage, comprising:

a substrate;

a first and a second waveguide positioned over a given length in close proximity to, but spaced from one another and respectively arranged in series in said first and second optical circuits; each said waveguide being made of an electro-optical material exhibiting a refractive index higher than that of the material of said substrate and being in lateral contact with said substrate along at least said given length;

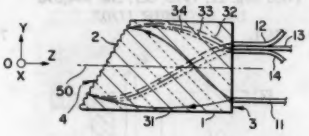
a first and a second electrode arranged over said substrate for respectively covering, along at most said given length, said first and said second waveguide; and said voltage being applied between said first and second electrodes.

4,198,117

OPTICAL WAVELENGTH-DIVISION MULTIPLEXING AND DEMULTIPLEXING DEVICE

Kohroh Kobayashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1977, Ser. No. 865,205
Claims priority, application Japan, Dec. 28, 1976, 51-158515; Jul. 7, 1977, 52-81736
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.19 6 Claims



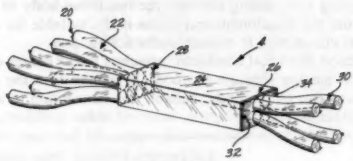
1. An optical wavelength-division multiplexing and demultiplexing device characterized by comprising: a light-focusing transmission body having a refractive index graded to decrease in a cross section normal to the axis of said transmission body radially from the center to the periphery thereof and having an axial length approximately equal to a multiple of one quarter of the pitch of undulation of a light beam travelling through said transmission body; and diffraction grating means formed on the axis of said transmission body at a distance approximately equal to an odd multiple of one quarter of the pitch of beam undulation from one end face of said transmission body which is normal to the axis thereof.

4,198,118

POWER EQUALIZING MULTIPORT OPTICAL COUPLER

David R. Porter, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 726,873, Sep. 27, 1976, abandoned. This application May 26, 1978, Ser. No. 909,874
Int. Cl.[2] G02B 5/16
U.S. Cl. 350—96.16 16 Claims



1. A fiber optic data system comprising:

a plurality of data terminals;

at least two optical couplers,

one coupler including a first port and a plurality of local second ports,

the other coupler including a first port, a plurality of remote second ports, and first means for distributing a signal received at said first port thereof in equal parts to said remote second ports thereof;

transmission means for optically connecting said first ports directly to one another;

a plurality of optical conductors connecting each of said second ports to a different one of said terminals;

transmitting means optically coupled to a terminal con-

nected to one of said local ports for generating an optical input signal; and

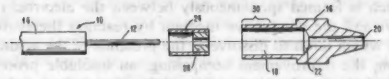
second means for dividing said input signal into a first signal portion and a second signal portion and delivering said first signal portion through said first port of said one coupler, for attenuating said second signal portion and delivering an equal part of the attenuated second signal portion to each of said local ports, and for controlling the ratio of power levels between said first and second signal portions and the degree of attenuation of the power level of said second signal portion, such that output signals of substantially equal power level are generated at all second ports in response to said input signal.

4,198,119

CONNECTOR FOR OPTICAL CABLE

Edward C. Uberbacher, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 13, 1978, Ser. No. 942,084
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.20 **13 Claims**



1. A connector assembly for a cable comprising a thread-like energy conductor surrounded by a protective jacket, the jacket being stripped from the conductor adjacent one end, said assembly comprising:

a connector body having an opening therethrough for receiving the stripped end of the cable, the opening comprising a first bore and a second, relatively smaller bore coaxial with the first bore;

a cylindrical heat-shrinkable sleeve received within the first bore; and

a cylindrical sleeve of filler material received within the heat-shrinkable sleeve,

said heat-shrinkable sleeve and said filler material sleeve surrounding and being in intimate contact with the energy conductor with at least part of said filler material extending into the second bore.

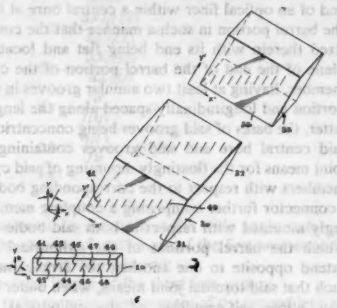
4,198,120

FIBER OPTIC DEVICE FOR CORRECTING IMAGE TILT OR CURVATURE IN A SPECTROGRAM

David D. Norris, San Gariel, and Charles E. Giffin, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jun. 23, 1978, Ser. No. 918,373
Int. Cl.[2] G02B *5/17*; G01J *3/00*
U.S. Cl. 350—96.25 **5 Claims**

1. For use with a source, from which spaced apart parallel light images emanate, said images being neither parallel nor perpendicular to either of two orthogonal axes of said source, optic means having an input face to which said images from said source are directed, and a substantially rectangularly shaped output face, extending along first and second orthogonal axes, said optic means comprising fiber optic elements, each with a longitudinal axis along a straight line, arranged between said input and output faces for providing, in response to the images from said source which impinge said input face, images



at said output face which are spaced apart and parallel to said first axis and perpendicular to said second axis.

4,198,121

COATING FOR OPTICAL FIBRES

Louis Le Davay, Louveciennes, and Robert Jocteur, Lyon, both of France, assignors to Les Cables de Lyon, Lyon, France

Filed Jun. 24, 1975, Ser. No. 589,826
Claims priority, application France, Jul. 16, 1974, 74 24709
Int. Cl.[2] G02B *5/14*; B05D *3/04*
U.S. Cl. 350—96.30 **3 Claims**

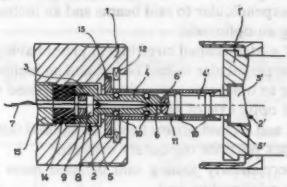
1. A coated optical fibre comprising an optical fibre coated with at least one layer of a hardened resinous composition comprising the reaction product of a phenolic resin and an isocyanate hardened at ambient temperature and in a few seconds on contact with a catalytic amount of a tertiary amine which is gaseous or is suspended in a gas.

4,198,122

CONNECTOR WITH SELF-CENTERING ELEMENTS FOR OPTICAL CONDUCTORS

Jean-Claude Prunier, Herblay, and Yves Bellemon, Pecq, both of France, assignors to Societe Nouvelle de Connexion, Carrieres sur Seine, France

Filed Jan. 13, 1978, Ser. No. 869,134
Claims priority, application France, Jan. 28, 1977, 77 02417
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.21 **9 Claims**



1. A connector for optical conductors, comprising:

a casing formed by two opposite bodies and complementary fixing means for assembly of one of the opposite bodies to the other of the opposite bodies with axial pressure,

each said body receiving a cylindrical member comprising a shoulder portion and a barrel portion, said cylindrical member being retained by said shoulder portion and disposed with said barrel portion directed towards the corresponding barrel portion of the cylindrical member mounted in the opposite body, each of said cylindrical

members being floatingly mounted with respect to its corresponding body,

each cylindrical member further being adapted to receive an end of an optical fiber within a central bore at the end of the barrel portion in such a manner that the conductor is fixed therein with its end being flat and located in the plane of the end of the barrel portion of the cylindrical member, having at least two annular grooves in the barrel portion and longitudinally spaced along the length of the latter, the bases of said grooves being concentric with the said central bore and said grooves containing toroidal joint means for the floatingly mounting of said cylindrical members with respect to the corresponding body, and

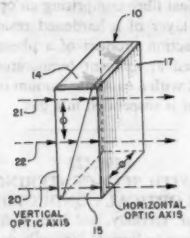
the connector further comprising a coupling member floatingly mounted with respect to both said bodies and into which the barrel portions of the cylindrical members extend opposite to one another, the arrangement being such that said toroidal joint means, when under compression, allow self-centering of the cylindrical members within the said coupling member when the latter are engaged against one another under the action of said complementary fixing means.

4,198,123

OPTICAL SCRAMBLER FOR DEPOLARIZING LIGHT

Jerome C. Kremen, Takoma Park, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 23, 1977, Ser. No. 780,386
Int. Cl.[2] G02B 1/24
U.S. Cl. 350—157 **6 Claims**



1. An optical scrambler for depolarizing generally parallel beams of polarized incident light including ultraviolet wavelengths comprising:

a first wedge-shaped birefringent prism having a principal face perpendicular to said beams and an inclined face, and having an optic axis;

a second wedge-shaped birefringent prism having a principal face perpendicular to said beams and an inclined face, and having an optic axis orthometrically disposed with respect to said optic axis of said first prism;

said first and second prisms being juxtaposed with their base and apex portions oppositely oriented;

means permanently joining said inclined faces in optically wrung relationship; and

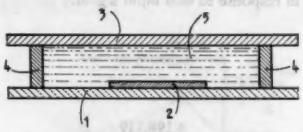
each of said first and second prisms having a respective apex angle defined by the angular displacement between said respective inclined face and said principal face, the respective apex angles of said first and second prisms being substantially equal and acute such that emergent beams of light from the principal face of said second prism are substantially parallel to said incident light beams on the principal face of said first prism, and said polarized incident light beams are transformed into a plurality of cycles of polarization at the principal face of said second prism containing all states of polarization.

4,198,124

ELECTRO-OPTIC DISPLAY DEVICE

Jacques Cognard, Areuse, Switzerland, assignor to Ebauches, S.A., Neuchatel, Switzerland

Continuation-in-part of Ser. No. 685,094, May 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 469,128, May 13, 1974, abandoned. This application Feb. 14, 1977, Ser. No. 768,380
Claims priority, application Switzerland, May 21, 1973, 7186/73
Int. Cl.[2] G02F 1/40
U.S. Cl. 350—357 **5 Claims**



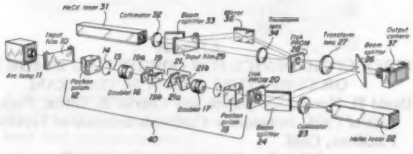
1. In an electro-optic display device which includes a transparent conductive substrate, an electrochromic layer applied to the substrate, a counterelectrode spaced from the electrochromic layer and a liquid acidic conductive medium disposed between the electrochromic layer and the counterelectrode, the electrochromic layer having a polyacid interfacial layer which is formed spontaneously between the electrochromic layer and the conductive medium by reaction therebetween and which tends to dissolve in the presence of the acidic medium; the improvement comprising, an insoluble protective layer between the electrochromic layer and the conductive medium resulting from the doping of the liquid acidic conductive medium with a salt of a cation dopant having an ionic radius no less than 0.99 Angstroms according to the classification of Pauling, said protective layer consisting of the in situ precipitated salt product of reaction between said interfacial layer and said cation dopant, said protective layer acting to inhibit deterioration of the electrochromic layer due to dissolution of said electrochromic layer by the acidic conductive medium.

4,198,125

METHOD AND APPARATUS FOR OBTAINING THE DOPPLER TRANSFORM OF A SIGNAL

Berge Tatian, Stoneham; Richard H. Hudgin, Newton, and Peter Nisenson, Burlington, all of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Aug. 22, 1977, Ser. No. 826,804
Int. Cl.[2] G06G 9/00; G02B 27/00
U.S. Cl. 350—162 SF **12 Claims**



1. A method for obtaining the doppler transform of a one-dimensional signal comprising:

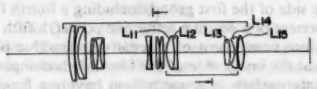
(a) rearranging said one-dimensional signal in a two-dimensional raster image pattern format; and

(b) producing a plurality of optical linear transforms of said two-dimensional image pattern, said step of producing a plurality of optical linear transforms comprising the steps of optically applying a plurality of horizontal stretches (or contractions) together with a plurality of horizontal shears to the two-dimensional image pattern.

4,198,126
ZOOM LENS SYSTEM CAPABLE OF MACROPHOTOGRAPHY

Haruo Abe, and Mitsuo Yasukuni, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1977, Ser. No. 798,365
Claims priority, application Japan, May 27, 1976, 51-61923
Int. Cl.[2] G01B 15/18
U.S. Cl. 350—184 21 Claims



1. A zoom lens system capable of macrophotography comprising:

a focusing lens group;

a variator lens group;

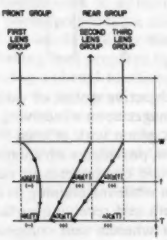
a compensator lens group; and

a relay lens group, said focusing lens group being shiftable in a first mode of operation for focusing an object within a normal photographic range from infinity to a relatively close object distance, said variator and compensator lens groups being shiftable according to a predetermined relationship to provide a zooming operation in said first mode, at least a part of said zoom lens system being shiftable in a different manner from that in said first mode for focusing an object within a macrophotography range in a second mode of operation, and at least a part of said relay lens group, having a substantial refractive power, being shiftable with relation to the shift of said part of said zoom lens system in said second mode for correcting any undesirable introduction of aberrations in said second mode.

4,198,127
WIDE ANGLE ZOOM LENS SYSTEM HAVING SMALL DISTORTION

Takayuki Itoh, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1978, Ser. No. 966,408
Claims priority, application Japan, Dec. 2, 1977, 52-144838
Int. Cl.[2] G02B 15/16
U.S. Cl. 350—184 4 Claims



1. A wide angle zoom lens system exhibiting a small distortion aberration, said zoom lens system comprising, in order from the object side, a front lens group having a negative focal length and a rear lens group having a positive focal length, said front lens group being a first lens group and said rear lens group being further grouped into a second lens group having a positive focal length and a third lens group having a negative focal length, said first, second and third lens groups being axially displaceable to maintain the image focus plane at a constant position, said zoom lens system satisfying the following conditions:

$$1.0 < \frac{f_W}{f_{WI\,II}} < 1.35 \quad (1)$$

$$0.0 < \frac{f_W}{|f_{III}|} < 0.35 \quad (2)$$

$$1.0 \leqq \frac{\Delta X_{III}(T)}{\Delta X_{II}(T)} < 1.2 \quad (3)$$

$$0.9 < \frac{\Delta X_{III}(f)}{\Delta X_{II}(f)} < 1.3 \quad (4)$$

$$0.3 < \frac{f_W}{f_{III1}} < 1.0 \quad (5)$$

$$0.0 \leqq \frac{l_{III\,1}}{f_W} < 0.02 \quad (6)$$

$$1.67 < N_{III2} \quad (7)$$

where:

f_W is the overall focal length at the wide angle end;

f_{WIII} is the resultant focal length of the first and second lens groups at the wide angle end;

f_{III} is the focal length of the third lens group;

$\Delta X_{II}(T)$ is the amount of movement of the second lens group at the telephoto end from the wide angle end;

$\Delta X_{III}(T)$ is the amount of movement of the third lens group at the telephoto end from the wide angle end;

$\Delta X_{II}(f)$ is the amount of movement of the second lens group at a overall focal length (f) from the wide angle end;

$\Delta X_{III}(f)$ is the amount of movement of the third lens group at a overall focal length (f) from the wide angle end;

f_{III1} is the focal length of the first positive lens within the third lens group;

l_{III1} is the aerial space between the first positive lens and the first negative lens within the third lens group; and

N_{III2} is the refractive index on d-line of the first negative lens within the third lens group, the lens system comprising, in order from the object side, the first lens group having four lenses, with a first lens L_1 being a positive lens having a convex surface on the object side in the direction of the object, second and third lenses L_2, L_3 being negative lenses and the fourth lens L_4 being a positive lens having a stronger curvature surface on the object side in the direction of the object than the opposite surface thereof, the second lens group having four lenses, with fifth and sixth lenses L_5, L_6 being positive lenses, a seventh lens L_7 being a negative lens and an eighth lens L_8 being a positive lens, and the third lens group having three lenses, a ninth lens L_9 being a positive lens having a stronger curvature surface on the image side in the direction of the image than the opposite surface thereof, a tenth lens L_{10} being a double concave negative lens and an eleventh lens L_{11} being a positive lens having a stronger curvature surface on the object side in the direction of the object than the opposite surface thereof, the lens system further defined by the following parameters:

	aperture ratio 1 : 4.0	overall focal length f = 70 ~ 136		half of view angle ω = 32.6° ~ 17.8°	
	Lens	radius of curvature	spacing and thickness	refractive index at d-line	Abbe No.
First Lens Group	L_1	r_1 = 150.649	d_1 = 8.00	n_1 = 1.72916	ν_1 = 54.7
		r_2 = −735.300	d_2 = 0.20		
	L_2	r_3 = −5269.610	d_3 = 3.00	n_2 = 1.83400	ν_2 = 37.2
		r_4 = 44.106	d_4 = 13.29		
	L_3	r_5 = −203.686	d_5 = 2.80	n_3 = 1.60311	ν_3 = 60.7
		r_6 = 178.820	d_6 = 5.36		

-continued

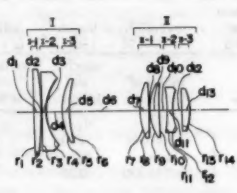
	L_4	r_7= 83.982	d_7= 6.50	n_4= 1.80518	ν_4= 25.4
		r_8= 833.236	d_8= 61.12		
Second Lens Group	L_5	r_9= 97.607	d_9= 6.20	n_5= 1.77250	ν_5= 49.6
		r_{10}= −208.329	d_{10}= 0.20		
	L_6	r_{11}= 51.744	d_{11}= 8.43	n_6= 1.71300	ν_6= 53.9
		r_{12}= 128.585	d_{12}= 7.00		
	L_7	r_{13}= −173.199	d_{13}= 12.00	n_7= 1.80518	ν_7= 25.4
		r_{14}= 44.022	d_{14}= 5.12		
	L_8	r_{15}= 132.122	d_{15}= 8.46	n_8= 1.67000	ν_8= 57.4
		r_{16}= −75.081	d_{16}= 5.75		
Third Lens Group	L_9	r_{17}= −3077.663	d_{17}= 4.00	n_9= 1.57845	ν_9= 41.5
		r_{18}= −70.825	d_{18}= 0.20		
	L_{10}	r_{19}= −98.250	d_{19}= 2.00	n_{10}= 1.81600	ν_{10}= 46.6
		r_{20}= 65.844	d_{20}= 1.20		
	L_{11}	r_{21}= 94.611	d_{21}= 4.50	n_{11}= 1.80400	ν_{11}= 46.6
		r_{22}= −302.170			

OVERALL FOCAL LENGTH f	70	100	136
d_8	61.12	24.05	1.10
d_{16}	5.75	3.30	1.01

4,198,128
WIDE ANGLE ZOOM LENS SYSTEM

Shuji Ogino, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 4, 1978, Ser. No. 866,939
Claims priority, application Japan, Jan. 21, 1977, 52-6167
Int. Cl.² G02B *15/14*
U.S. Cl. 350—184 **11 Claims**



1. A wide angle, compact two-group zoom lens system capable of varying the focal length of the system by means of changing the air space formed between the two groups, comprising:

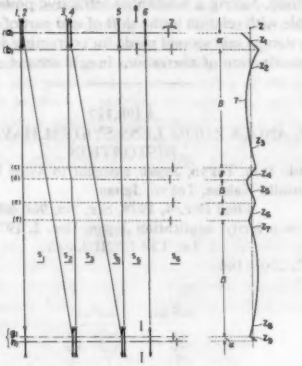
a first group of a negative refractive power including a first front lens component of a positive refractive power, a second intermediate lens component of a negative refractive power located at the image side of the first lens component, the second intermediate lens component having a front surface and a rear surface and the absolute value of the radius of curvature of the front surface being greater than that of the rear surface, and a rear third lens component of a positive refractive power located at the image side of the second lens component, the third rear lens component having a front surface convex to the object side and a rear surface concave to the image side; and

a second group of a positive refractive power located at the image side of the first group, including a fourth front lens component of a positive refractive power, a fifth intermediate lens component of a negative refractive power located at the image side of the fourth lens component, the fifth intermediate lens component having a front surface and a rear surface and the absolute value of the radius of curvature of the front surface being greater than that of the rear surface, and a sixth rear lens component of a positive refractive power located at the image side of the fifth component, wherein each of the first, second and third lens components consists of a single lens element.

4,198,129
VARIFOCAL LENS SYSTEM WITH THREE MOVING COMPONENTS

Peter Vockenhuber, Grandson, Switzerland, assignor to Bolex International S.A., Ste-Croix, Switzerland

Filed Apr. 19, 1978, Ser. No. 897,722
Claims priority, application Switzerland, Apr. 21, 1977, 4939/77
Int. Cl.² G02B *15/14, 7/10*
U.S. Cl. 350—187 **10 Claims**



1. In an optical objective system of variable focal length for the projection of images upon a receiving surface, including a varifocal front lens group with at least four components and fixed rear lens means, provided with zooming means for axially shifting certain of said components to vary the overall focal length of the system while maintaining its image plane substantially coincident with said receiving surface,

the improvement wherein said components include a first component of one refractivity type farthest from said receiving surface, a second component of the opposite refractivity type following said first component, a third component of said one refractivity type following said second component, and a fourth component of said opposite refractivity type between said third component and said rear lens means, said second component being operatively coupled with said zooming means for continuous axial displacement over a varifocal range, said third component being operatively coupled with said zooming means for intermittent axial displacement at a linear rate in said varifocal range, said third component being stationary in a plurality of subranges in each of which said image

plane coincides at least once with said receiving surface, said subranges being separated by at least one intervening range segment in which said image plane crosses said receiving surface, said fourth component being operatively coupled with said zooming means for continuous axial displacement parallel to said second component in at least a major part of said varifocal range encompassing said subranges and each intervening range segment.

4,198,130

LIQUID CRYSTAL MIXTURES

Arthur Boller, Binningen; Alfred Germann, Munchenstein; Martin Schadt, Seltisberg, and Hanspeter Scherrer, Therwill, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

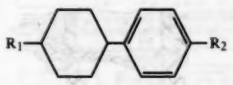
Filed May 22, 1978, Ser. No. 907,961

Claims priority, application Switzerland, Jun. 3, 1977, 6863/77; Apr. 11, 1978, 3868/78

Int. Cl.[2] C09K *3/34*; C02F *1/13*

U.S. Cl. 350—350 **15 Claims**

1. A nematic liquid crystal mixture having positive anisotropy of the dielectric constants comprising a nematogenic material having a clearing point above 60° C. and one or more compounds of the formula



I

wherein R_1 and R_2 are hydrogen or straight-chain alkyl, provided that at least one of R_1 and R_2 is other than hydrogen and that the sum of the number of carbon atoms present in R_1 and R_2 is at most 9.

4,198,131

SILICONE RESIN OPTICAL DEVICES

Arthur A. Birdsall; John K. Fitzgerald; David P. Jones, and Keith E. Polmanteer, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 889,165, Mar. 23, 1978, abandoned. This application May 15, 1978, Ser. No. 905,626

Int. Cl.[2] C08G *77/00*; G02C *7/04*

U.S. Cl. 351—160 R **12 Claims**

1. As an optical device a lens to be worn against or inside the eye having an open eye EOP of at least 3 percent at 0.1 mm thickness and a light transmission of at least 85% consisting essentially of a cured phenylpolysiloxane resin having a durometer of at least 60 on the D scale at the temperature of fabrication, said resin having been prepared by curing a polysiloxane composition having a phenyl to silicon ratio of at least about 0.2 and sufficient vinylsiloxane or silacyclopentenylsiloxane to give the desired durometer to the cured resin, essentially all the substituents on the silicon atoms in said siloxane composition in addition to phenyl being selected from the group consisting of vinyl and butenylene and optionally alkyl or haloalkyl radicals of 1 to 3 carbon atoms and hydrogen.

4,198,132

CONTACT LENS

Ronald G. Seger; Wayne E. Trombley, and Lawrence R. Jacobson, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 14, 1978, Ser. No. 969,618

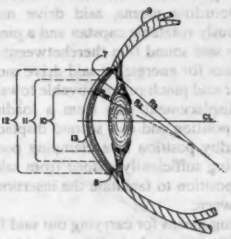
Int. Cl.[2] G02C *7/04*

U.S. Cl. 351—160 R **7 Claims**

1. A contact lens of a preselected mass comprising:

(a) an optical zone shaped to result in a desired optical correction and

(b) at least one peripheral zone the thickness of the peripheral zone being chosen to correspond with that of the optical zone in such a way that the preselected mass is achieved, and wherein the inner surface of the optical zone has a radius of curvature substantially equal to the radius of curvature of the cornea at its optical centerline, wherein the inner surface of each peripheral zone is an arc having a center of curvature offset from the optical centerline of the optical zone, each such center of curvature advancing around a circle which is the locus of center of curvature points, wherein the optical zone and each succeeding peripheral zone are tangent at their intersection, and wherein the inner surface of the lens is shaped relative to the eye to be fitted so that at least tearfilm clearance is achieved from the periphery to the center of the optical zone.



4,198,133

CINE CAMERA

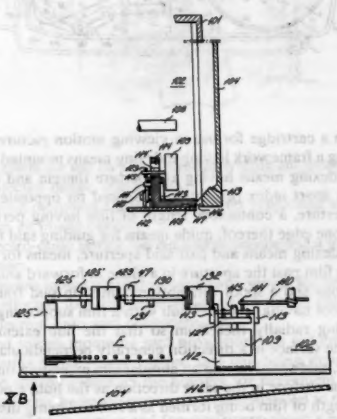
Otto Freudenschuss; Otto Kantner, and Peter Revy von Belvard, all of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Continuation of Ser. No. 669,338, Mar. 22, 1976, Pat. No. 4,070,170, which is a continuation-in-part of Ser. No. 460,136, Apr. 11, 1974, abandoned. This application Nov. 18, 1977, Ser. No. 852,727

Claims priority, application Austria, Apr. 16, 1973, 3383/73; Apr. 19, 1973, 3485/73; May 24, 1973, 4565/73

Int. Cl.[2] G03B *31/02*

U.S. Cl. 352—27 **5 Claims**



1. In a cine camera, in combination:

a casing having a chamber adapted to accommodate silent-

film cassettes and larger sound-film cassettes, said casing being provided with an exposure gate and sound-recording means;

sensing means in said casing at a location beyond the boundary of a silent-film cassette received in said chamber for detecting the presence of a sound-film cassette therein;

drive means in said casing for transporting a film past said exposure gate and in the case of a sound film past said sound-recording means, said drive means including a continuously rotatable capstan and a pinch roller adapted to clamp said sound film therebetween;

trigger means for energizing said drive means;

a holder for said pinch roller movable toward said capstan in a first displacement step from a loading position to a standby position and in a second displacement step from said standby position to a clamping position, said pinch roller being sufficiently spaced from said capstan in said loading position to facilitate the insertion of a sound film therebetween;

first actuating means for carrying out said first displacement step in an unoperated condition of said trigger means; and

second actuating means for carrying out said second displacement step in an operated condition of said trigger means, one of said actuating means being controlled by said sensing means to prevent the performance of the corresponding displacement step in the absence of a sound-film cassette.

4,198,134

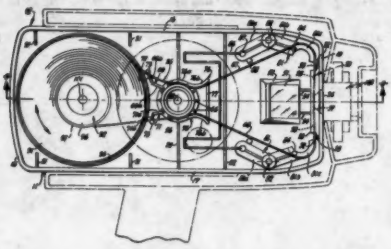
FILM CARTRIDGE

Werner W. Ciupke, Burlingame; Steven R. Runyan, and Hugh P. Sherlock, both of Palo Alto, all of Calif., assignors to Montron Corporation, Mountain View, Calif.

Continuation of Ser. No. 535,376, Dec. 23, 1974, abandoned. This application Apr. 19, 1977, Ser. No. 789,002

Int. Cl.[2] G03B *21/00*

U.S. Cl. 352—129 **20 Claims**



1. In a cartridge for use in viewing motion pictures, means forming a framework having indexing means mounted thereon, said indexing means having an aperture therein and a pair of spaced apart index projections disposed on opposite sides of the aperture, a continuous length of film having perforations along one edge thereof, guide means for guiding said film over said indexing means and past said aperture, means for advancing the film past the aperture in a plane in forward and reverse directions and a spool rotatably mounted in said framework, said spool having a central hub with a film supporting surface extending radially therefrom so that the hub extends away from the surface in a direction generally perpendicular to said surface, said spool having an annular rim extending outwardly from the surface in the same direction as the hub, a portion of said length of film being formed as a roll and being disposed in said spool with the hub in the center of the roll and with the rim on the outside of the roll so that the film can be payed out continuously either from the inside of the roll or the outside of the roll, said film when being payed in on the outside of the roll and engaging said annular rim to help drive the spool.

4,198,135

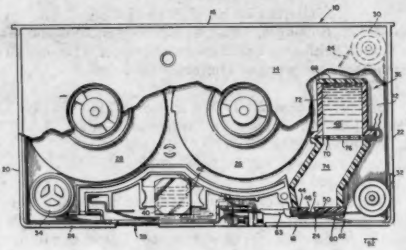
METHOD AND APPARATUS FOR RELEASING PROCESSING FLUID FROM A FLUID APPLICATOR BY APPLICATION OF THERMAL ENERGY

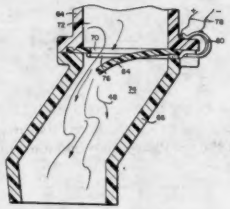
Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 4, 1979, Ser. No. 26,909

Int. Cl.[2] G03C *11/00*

U.S. Cl. 352—130 **21 Claims**





1. In a photographic film cassette containing a strip of film having a light sensitive emulsion surface and a fluid processing applicator containing processing fluid and having a sealable area capable of releasing the fluid onto the emulsion surface for facilitating forming a layer of processing fluid thereon, the improvement comprising:

said applicator including means for sealing its said sealable area, said sealing means being responsive to the application of a predetermined level of thermal energy to said applicator to open and release said fluid; and

selectively operable means for facilitating the application of said predetermined level of thermal energy to said applicator to cause said sealing means to open said sealable area to thereby release the processing fluid.

4,198,136

REPRODUCING OF INTERSPERSED MOTION-PICTURE SCENES AND STILL SHOTS

Frank Staudacher, Haan; Otto Stemme, Munich; Peter Lermann, Narring; Werner Went, Leverkusen; Volkmar Stenzenberger, Unterhaching; Eberhard Herzig, Cologne; Friedrich Stumpf, Munich; Thomas Scheller, Munich; Jürgen Sylla, Munich; Friedrich Winkler, and Johann Zanner, both of Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 950,126

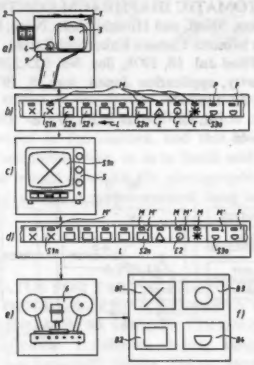
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746036

Int. Cl.[2] G03B *21/38*

U.S. Cl. 352—169 **2 Claims**

1. In an apparatus for reproducing motion pictures recorded on a recording medium, in combination, reproducing means operative for reproducing successive image frames on the recording medium, including transport means for transporting

the recording medium through the apparatus; and interrupt-transport marking detector means operative for detecting interrupt-transport frame markings on the recording medium correlated with certain image frames and in response to such detection causing the transport means to discontinue recording medium transport so that the reproducing means reproduces those image frames as still images, the marking detector means being adapted to detect both end-of-scene interrupt-transport frame markings correlated with the terminal frames of motion-picture scenes and still-shot interrupt-transport frame markings correlated with recorded still shots, the marking detector means including discriminating means for discriminating between end-of-scene and still-shot interrupt-transport frame markings and selecting means for selecting the interrupt-transport markings to be detected, the discriminating means comprising means for discriminating between a first case in which a frame provided with an interrupt-transport frame marking is not preceded by a frame provided with an interrupt-transport frame marking, and a second case in which a frame provided with an interrupt-transport frame marking is preceded by a frame provided with an interrupt-transport frame marking, the detector means comprising two marking detectors spaced apart in the direction of recording medium transport a distance corresponding to one image frame, the discriminating means comprising means for differentiating between the case wherein both marking detectors detect interrupt-transport frame markings and the case wherein only one of the two marking detectors detects an interrupt-transport frame marking.



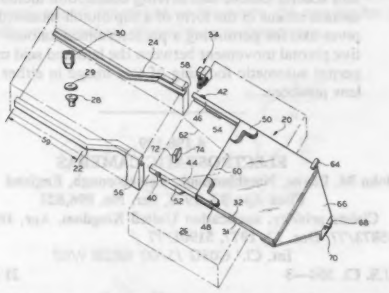
4,198,137

MICROFILM READER/PRINTER WITH NORMALLY OPEN AND REMOVABLE GLASS FLAT ASSEMBLY

David G. Stites, Elgin, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Apr. 26, 1978, Ser. No. 900,395
Int. Cl.[2] G03B *1/48*
U.S. Cl. 353—23 **9 Claims**

1. A microfilm reader/printer comprising an optical path including a vertical lens means for projecting an image on said film, slidably removable carrier means including a pair of spaced glass flats lying in a horizontal plane for clamping said film in an optical plane when said image is to be projected from said film, a lifting tab means attached to one of said glass flats and operated by a solenoid controlled mechanical linkage system, means for normally holding said pair of glass flats in an open position so that said film may be transported between said glass flats with minimum danger of scratching, and means for closing said pair of glass flats to clamp said film in said optical plane while said image is being projected through said optical path wherein said means for normally holding said pair of glass flats in an open position and for closing said pair of glass flats comprises an interconnected pair of links, a first link having a length and width, the length greater than the width, and the first link having opposite ends in the length direction, the first link being normally held such that the length is in a generally upright position and pivoted near approximately its midpoint between the opposite ends, the second of said links being pivotally interconnected to said first link near one of said first links



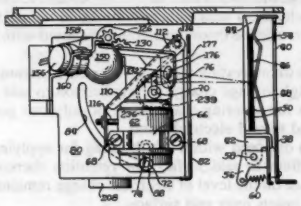
ends when in the upright position, and solenoid means connected near the end of said first link opposite the end the second link is connected to for pivoting said first link off said normally upright position thereby lowering the second link, and bracket means connected to said second link for supporting and moving said lifting tab whereby the glass flats are controlled.

4,198,138

AUTOMATIC FOCUSING SYSTEM FOR PROJECTORS

Robert R. Parker, Wheeling, and Nicholas Mischenko, Mt. Prospect, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 19, 1978, Ser. No. 897,879
Int. Cl.[2] G03B *21/22*
U.S. Cl. 353—71 **24 Claims**



1. A system for use on a projector providing automatic focus of a projected image, comprising:

a housing including a projection lens for projecting an image from an image carrier;

an electro-optic sensor having a light source and a photodetector;

first means mounting said electro-optic sensor for providing a reflected focusing light beam on an image carrier for reflection onto said photodetector;

second means mounting said projection lens for movement relative to the image carrier, said lens being mounted by said second means on the housing for movement perpendicular to the image carrier, in a plane parallel to the plane of the image carrier and for movement about a pivot axis for pivotal movement relative to the image carrier;

third means for mounting at least a portion of the electro-optic sensor for movement in a 2:1 ratio simultaneously with the projection lens; and

control means responsive to the output of said electro-optic sensor for maintaining a predetermined relationship between said projection lens and said image carrier, said control means including a lens drive means and circuit means connected between said lens drive means and said electro-optic sensor for maintaining said predetermined relationship, said lens drive means further including a motor mounted on the housing and drivingly connected to said second means, said driving connection including lost motion means in the form of a slip clutch mounted on the pivot axis for permitting a predetermined amount of relative pivotal movement between the lens and said motor to permit automatic focusing of said image in either of said lens positions.

4,198,139

ELECTROSTATIC CAMERAS

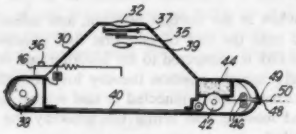
John M. Payne, Northborough, Peterborough, England

Filed Apr. 17, 1978, Ser. No. 896,823

Claims priority, application United Kingdom, Apr. 16, 1977, 15873/77; Dec. 13, 1977, 51901/77

Int. Cl.[2] G03G *15/00*; G03B *9/02*

U.S. Cl. 354—3 **21 Claims**



1. A portable electrostatic camera comprising:

a light-tight housing having an aperture for admitting light;

a surface within the housing;

a shutter for controlling the passage of light through said aperture to said surface to form an optical image thereon;

a single point discharge electrode disposed within said housing between the aperture and the surface for electrically charging said surface prior to the formation of the optical image thereon, which surface modifies the charge to form an electrical image corresponding to the optical image;

a piezo-electric crystal generator disposed within said housing;

means for activating said piezo-electric generator to produce a high voltage charge for application to said electrode;

means for ensuring that charge of only one polarity is applied to said electrode; and

means disposed within said housing for applying a printing medium to said surface for retention thereon in dependence on the level of electrical charge remaining at different points over said surface.

4,198,140

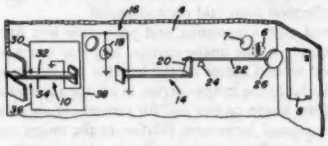
PIEZOELECTRIC CAMERA SHUTTER

Lee F. Frank, and James K. Lee, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 816,776, Jul. 18, 1977, abandoned. This application Sep. 14, 1978, Ser. No. 942,237

Int. Cl.[2] G03B *7/08*

U.S. Cl. 354—50 **5 Claims**



1. For use in photographic apparatus of the type having means for imagewise exposing a photosensitive material, apparatus for controlling the exposure of such material, said apparatus comprising: (a) a photoelectric exposure control circuit for controlling the exposure of a photosensitive material in accordance with ambient lighting conditions, said circuit comprising a piezoelectric motor for storing electrical energy and a photocell, positioned to be illuminated by ambient light, for dissipating energy stored by said piezoelectric motor at a rate determined by the ambient light level, said rate controlling the exposure of the photosensitive material; and (b) a piezoelectric generator for energizing said circuit.

4,198,141

OUT-OF-RANGE INDICATION DEVICE FOR AUTOMATIC DIAPHRAGM CONTROL

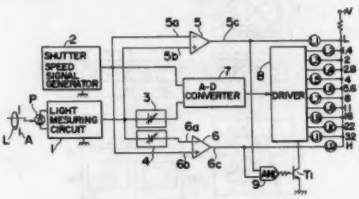
Shinji Tominaga, Sakai, and Hiroshi Ueda, Nara, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 10, 1978, Ser. No. 923,228

Claims priority, application Japan, Aug. 5, 1977, 52/94299; Sep. 12, 1977, 52/110342

Int. Cl.[2] G03B *7/20, 17/18*

U.S. Cl. 354—46 **10 Claims**



1. A diaphragm aperture indicating system for a camera to be coupled with an interchangeable lens having a diaphragm aperture range, said system comprising:

means for indicating a diaphragm aperture suitable for a measured scene brightness and a set shutter speed;

first and second indication members;

a first actuating means for generating an output to actuate said first indication member when the suitable diaphragm aperture exceeds one of the limits of the available diaphragm aperture range,

a second actuating means for generating an output to actuate said second indication member when the suitable diaphragm aperture exceeds the other limit of the available diaphragm aperture range; and

means responsive to the outputs of said first and second actuating means for preventing diaphragm aperture indication when either of said first and second actuating means generates an output.

4,198,142

POWER SUPPLY RESETTING CIRCUIT FOR CAMERA

Michio Yagi, Hachioji; Kazuo Shiozawa, Hino; Kijiro Suzuki, Tokyo; Kazuhisa Aratame, Hachioji; Haruji Ishihara, Kodaira, and Ryushi Shimokawa, Fuchu, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd. and Hitachi, Ltd., both of, Japan

Filed Jul. 14, 1978, Ser. No. 924,756

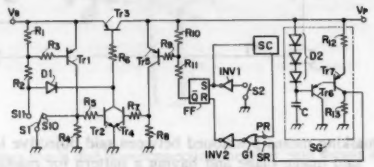
Claims priority, application Japan, Jul. 18, 1977, 52/85075

Int. Cl.[2] G03B *7/08, 17/38*

U.S. Cl. 354—60 R **3 Claims**

1. A power supply resetting circuit for use in such a camera that the shutter release action has two steps of strokes: a first stroke by which an electric power supply circuit is closed to supply the electric power to circuits mounted in the camera such as a light-measuring circuit, and a second stroke by which at least the photographing operation of said circuits is started, said power supply resetting circuit comprising a self-holding circuit and a start reset signal generating circuit provided in

addition to said circuits mounted in the camera and adapted for closing and breaking said power supply circuit, wherein the arrangement is such that said start reset signal generating circuit generates a start reset signal for setting said self-holding circuit inoperative according to said first stroke of the shutter release action, and that said self-holding circuit is turned operative so as to hold closed said electric power supply circuit by



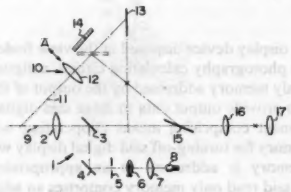
said second stroke of the shutter release action substantially simultaneously with the starting of operation of said electric circuits mounted in the camera, and that said self-holding circuit is turned inoperative, so as to break said power supply circuit, at the instant at which the photographing sequence is completed or within a predetermined time lag behind that instant.

4,198,143

APPARATUS FOR TAKING PHOTOGRAPHS OF SECTIONS OF CRYSTALLINE LENSES IN WHICH LINE FOCUSING MOVES LENS IN ITS OWN PLANE

Yukinori Karasawa, Yokohama, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1978, Ser. No. 877,669
Claims priority, application Japan, Feb. 18, 1977, 52/16985
Int. Cl.[2] A61B *3/14*
U.S. Cl. 354—62 **3 Claims**



1. Apparatus for photographing sections of crystalline lenses which comprises a slit illumination system for illuminating the crystalline lens in a slit plane, and a photographing optical system having an optical axis intersecting said slit plane at an angle of substantially 45° and a film plane intersecting said slit plane at an angle of 90°, said photographing optical system including photographing lens means positioned in said optical axis to provide a magnification power of one, said photographing lens means being movable in a plane which is perpendicular both to the slit plane and the film plane and in a direction perpendicular to the optical axis.

4,198,144

EYE FUNDUS CAMERA

Isao Matsumura, and Yoshimi Kohayakawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 782,711, Mar. 30, 1977, abandoned.
This application Oct. 10, 1978, Ser. No. 949,556
Claims priority, application Japan, Apr. 1, 1976, 51-36261
Int. Cl.[2] G03B *29/00*; A61B *3/10*
U.S. Cl. 354—62 **8 Claims**

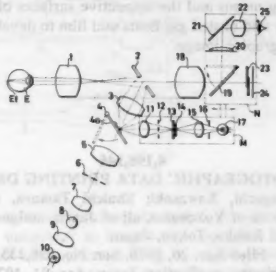
1. An eye fundus camera comprising:

a photographic system including holding means and an objective lens,

said holding means defining a plane at which a recording medium is to be mounted,

said objective lens forming an image of an eye fundus on the plane,

a focusable projector defining an optical axis for projecting at least three beams having equivalent angles with the optical axis of the objective lens upon the eye fundus at different directions of incidence to form spots,



coupling means for focusing the photographic system while focusing said projector so that when the eye fundus has a conjugate relation with the plane, the spots formed on the eye fundus by these beams exhibit a predetermined arrangement and when the eye fundus is not conjugate with the plane, the spots exhibit another arrangement, and

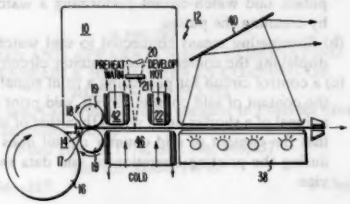
an observing device for observing the arrangement of the spots formed on the eye fundus.

4,198,145

APPARATUS FOR DEVELOPING PHOTOGRAPHIC IMAGES ON AN EMULSION COATED FILM

Richard D. Scott, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,662
Int. Cl.[2] G03B *17/50*; G03D *7/00*
U.S. Cl. 354—83 **12 Claims**



1. An apparatus for developing a fixed photographic image on a strip of photographic film, said film including a light-sensitive and heat-developable emulsion coated on a surface of a film base, comprising:

means for exposing said film to an image of light to record thereby a latent image on said emulsion;

film support means including gas distribution means responsive to a supply of flowing gas for uniformly distributing said gas to said light exposed film at a predetermined pressure, said gas distribution means being disposed adjacent to and on opposite surfaces of said film at a spacing such that said pressure of gas supplied to the respective surfaces of said film is sufficient to establish a gas bearing

on said respective film surfaces to support said film while being passed through said development apparatus; and

means for supplying flowing gas;

said film support means including heating means for supplying said gas to said emulsion surface at a temperature that is at least equal to the temperature of the gas supplied to said base surface;

said gas heating means including a matrix of heating pads disposed on the outer surface of said first and second gas distribution means;

said spacing being sufficient to transfer heat between said heating means and the respective surfaces of said film;

whereby said heated gas heats said film to develop said fixed photographic image.

4,198,146

PHOTOGRAPHIC DATA PRINTING DEVICE

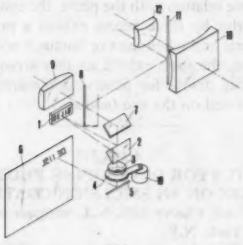
Tetsuya Taguchi, Kawasaki; Shuichi Tamura, and Youichi Okuno, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1978, Ser. No. 898,333

Claims priority, application Japan, Apr. 21, 1977, 52-46132; Apr. 22, 1977, 52-46522; Jul. 6, 1977, 52-80583

Int. Cl.[2] G03B *17/24, 13/02*

U.S. Cl. 354—106 **21 Claims**



1. A camera having a data recording device comprising:

(a) a watch circuit having a counter circuit for counting pulses, said watch circuit performing a watch operation by counting the pulses;

(b) illuminating means connected to said watch circuit for displaying the content of said counter circuit; and

(c) a control circuit for producing a print signal for holding the content of said counter circuit, said print signal being a signal of a shorter pulse width than that of said pulses so that the content of said counter circuit does not change during the printing operation of said data recording device.

4,198,147

ENCODING SYSTEM

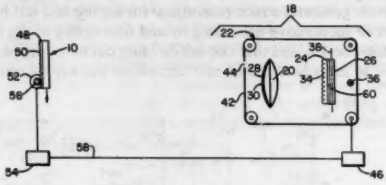
Alfred V. Alasia, 146-07 13th Ave., Whitestone, N.Y. 11357

Division of Ser. No. 722,532, Sep. 13, 1976, Pat. No. 4,092,654. This application Feb. 27, 1978, Ser. No. 881,560

Int. Cl.[2] G03B *35/00;* G02B *27/22*

U.S. Cl. 354—115 **8 Claims**

1. In a three-dimensional imaging camera of the type including an objective lens having a focal plane, a graticule positioned adjacent said focal plane, and shutter means operable to permit formation of an image of a subject at the combined image plane of said lens and graticule as a parallax panoramogram, the improvement comprising;



masking means positioned between said objective lens and said image plane and having a pattern for masking said image.

4,198,148

DISPLAY DEVICE IN CAMERA VIEW FINDER

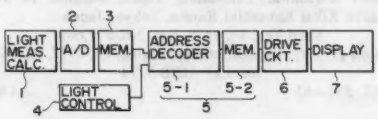
Eiichi Tano, Fukuoka, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1978, Ser. No. 954,676

Claims priority, application Japan, Oct. 25, 1977, 52-143034[U]

Int. Cl.[2] G03B *17/20*

U.S. Cl. 354—289 **9 Claims**



1. In a display device disposed in the view finder of a camera having a photography calculation circuit, a digital display and a read only memory addressed by the output of the calculation circuit to provide output data to drive said digital display, the improvement comprising means cooperating with said read only memory for turning-off said digital display when said read only memory is addressed to an appropriate instruction, wherein said read only memory comprises an address decoder and a memory, said address decoder comprising an array of NOR gates, and wherein said means cooperating with said read only memory generates an output to change the outputs of said array of NOR gates to a low level irrespective of the output of said calculation circuit and said memory instruction will blank out said digital display.

4,198,149

LOCKING SHUTTER SPEED DIAL DEVICE FOR A CAMERA

Katsuhiko Nomura, Kawagoe, and Keisuke Haraguchi, Ranzan, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 7, 1977, Ser. No. 831,208

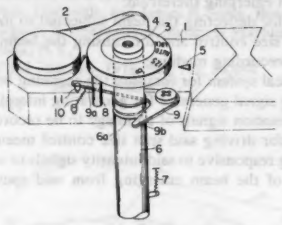
Claims priority, application Japan, Sep. 8, 1976, 51-120710[U]

Int. Cl.[2] G03B *17/38*

U.S. Cl. 354—268 **4 Claims**

1. In a camera having a shutter release operating member coaxially mounted with a shutter speed dial, the improvement comprising:

means for locking said shutter release operating member, and



a shutter speed dial interconnecting member, said means and said interconnecting member being engageable with each other by rotating said dial to a predetermined position.

4,198,150

CAMERA-HOLDING FRAME

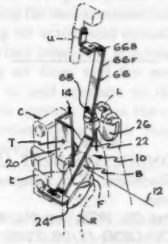
Conrad B. Sloop, 9092 Bermuda Dr., Huntington Beach, Calif. 92646

Continuation-in-part of Ser. No. 629,531, Nov. 6, 1975, Pat. No. 4,104,623. This application Dec. 16, 1977, Ser. No. 861,118

The portion of the term of this patent subsequent to Aug. 1, 1995, has been disclaimed.

Int. Cl.[2] G03B *15/03, 17/56, 29/00*

U.S. Cl. 354—293 **13 Claims**



1. Apparatus for use in holding a camera with a tripod-mounted portion located approximately a particular distance below the level of the axis of the lens of the camera, comprising:

a frame;

a camera mount including a camera holding portion for holding the tripod-mount portion of the camera;

handle means positioned on said frame so that when said handle means is held by a hand, the thumb and a finger of that hand can turn the lens barrel of a camera on said camera mount; and

linkage means for coupling said camera mount to said frame, including a first link having inner and outer ends respectively pivotally mounted on said frame and camera mount, and a second link having inner and outer ends respectively pivotally mounted on said frame and camera mount;

said links mounted so that when said camera mount rotates 90° between first and second positions, the position of a point located on said camera at a predetermined distance beyond said tripod-mount portion is substantially not changed with respect to said frame, to enable turning of the lens barrel by the hand which is holding said handle means, in spite of a 90° rotation of the camera.

4,198,151

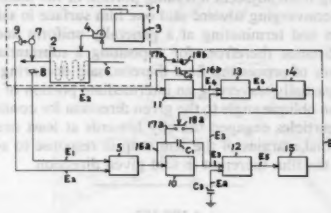
SYSTEM FOR REPLENISHING DEVELOPER

Ryuzo Matsugo, Tokyo, Japan, assignors to Sumiyoshi Denki Kabushiki-Kaisha, Tokyo, Japan

Filed Mar. 23, 1979, Ser. No. 23,181

Int. Cl.[2] G03D *13/00*

U.S. Cl. 354—298 **7 Claims**



1. A system for replenishing developer comprising:

(a) a first integrator to integrate a converted signal of an electrical value corresponding to a light radiated from a light source after interferring in a developed film;

(b) a second integrator to integrate an electrical signal being of a larger rising gradient than said converted signal;

(c) a first comparator to generate a signal for initiating replenishment of developer when it receives a prescribed electrical value signal as well as said signal from said first integrator and when such signal from said first integrator reaches the level of said prescribed electrical signal;

(d) a drive circuit to be driven on being given said signal for initiating replenishment of developer and to actuate a developer replenishment pump to cause said second integrator to start an operation;

(e) a second comparator to generate a signal for ceasing replenishment of developer when it receives said signal from said second integrator as well as said signal from said first integrator and when the former signal value becomes equal to the latter signal value; and

(f) a mono-multi circuit designed to be driven by said signal from said second comparator to generate a shot pulse, thereby to cause the operation of said first integrator to be ceased.

4,198,152

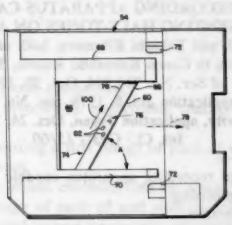
METHOD AND APPARATUS FOR ELIMINATING UNDESIRABLE BLEMISHES IN COATING OF PROCESSING FLUID

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 4, 1978, Ser. No. 965,857

Int. Cl.[2] G03C *11/00*

U.S. Cl. 354—317 **9 Claims**



1. In a cassette containing an elongated strip of film and a

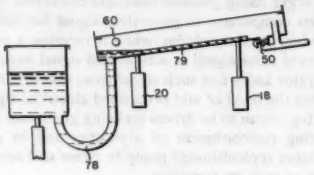
fluid applicator for depositing a layer of processing fluid on the film strip during advancement thereof in a given direction, said applicator includes means for depositing a uniform layer of the processing fluid on one film surface of the film strip and for urging particles of at least a predetermined size carried by the film strip to at least one of the longitudinal margins thereof, said depositing and urging means includes a nozzle opening through which the processing fluid is deposited onto said one surface, and an inclined generally planar doctoring surface extending from adjacent a trailing portion of the nozzle opening and converging toward said one film surface in said given direction and terminating at a generally uniform and preselected distance therefrom for depositing a substantially uniform layer of processing fluid thereon, said doctoring surface at least partially traversing an intermediate portion of the film strip at an oblique angle to the given direction for continuously urging particles engaged thereby towards at least one of the longitudinal margins of the film strip in response to advancement of the film therepast in said given direction.

4,198,153

PROCESSOR FOR PRINTING PLATES

James S. Hamlin, Cherry Hill, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 18, 1979, Ser. No. 4,489
Int. Cl.[2] G03D *3/06*
U.S. Cl. 354—325 **5 Claims**



1. An apparatus for processing the imaged surface of a photosensitive sheet, said apparatus comprising:
- a tray mounted for tilting movement, said tray having an upstanding rim;
- a lid for the tray;
- a storage tank for processing liquid;
- a hose presenting an open passage connecting the tank to the tray adjacent one end of the tray;
- a spray bar adjacent said one end, there being a drain means at the other end of the tray;
- means mounting the tank for movement between positions where the normal level of solution in the tank is respectively below and above the tray; and
- extensible means connected to the tray for tilting its other end upwardly when the tank is moved to its position below the tray and for tilting said one end upwardly before a sheet is sprayed.

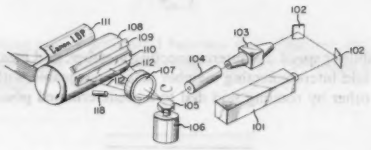
4,198,154

IMAGE RECORDING APPARATUS CAPABLE OF REPRESENTING HALF-TONES ON AN IMAGE

Koichi Masegi, and Takashi Kitamura, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 734,244, Oct. 20, 1976, abandoned.
This application Jul. 6, 1978, Ser. No. 922,314
Claims priority, application Japan, Oct. 24, 1975, 50-128172
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—5 **29 Claims**

1. An image recording apparatus capable of representing half-tones, comprising:
- a beam generator;
- a beam modulator;
- a recording medium sensitive to a beam;
- means for controlling the size of the beam spot impinging on said recording medium, said means including optical means for controlling the amount of aberration of the beam emerging therefrom;
- means for deflecting the beam subjected to modulation and spot size control and for causing the beam to scan over said recording medium;
- an optical system for focusing the scanning beam;
- a video signal generator for generating intensity signals and information signals of an image to be recorded; and
- means for driving said spot size control means, said means being responsive to said intensity signals to vary the diameter of the beam emerging from said spot size control



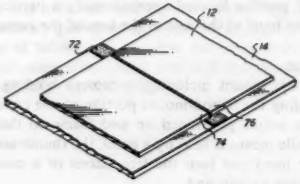
means to form a beam for screen dot recording, thereby enabling the half-tones of the image to be represented by different beam diameters;
- wherein said optical means further includes a telescope type optical arrangement comprising at least two lens groups to control the expanse of the beam impinging on said recording medium in accordance with the intensity signals of the image to be recorded and an element disposed between said at least two lens groups for varying the length of the optical path in accordance with said intensity signals, said element being effective to impart aberration to the wave front of the beam.

4,198,155

PHOTOCONDUCTIVE BELT ASSEMBLY

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 30, 1978, Ser. No. 956,123
Int. Cl.[2] G03G *15/00*; F16G *1/00*
U.S. Cl. 355—16 **8 Claims**

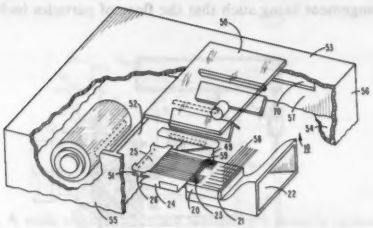


1. A belt assembly, including:
- a sub-belt;
- a photoconductive belt arranged to be secured releasably to one surface of said sub-belt;
- a strip having one surface thereof attached to said sub-belt with the other surface thereof having an adhesive so as to enable the leading and trailing edges of said photoconductive belt to be attached thereto; and
- means for supporting movably said sub-belt, said supporting means defining a path about which said sub-belt moves in unison with said photoconductive belt.

4,198,156
OPTICS CONTAMINATION PREVENTION UTILIZING A COANDA AIR DEFLECTION SYSTEM

Robert B. Barker, Louisville, and James B. Stack, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1979, Ser. No. 24,484
Int. Cl.[2] G03B 27/52
U.S. Cl. 355—30 **13 Claims**



1. In a document copier machine, an enclosed optics module comprising:

a glass platen forming at least a part of the top of said module;

a floor plate forming the bottom of said module;

walls extending between the top and bottom of said module and cooperating to enclose said module; except for an aperture to allow illumination to leave said module, an air inlet and an air outlet;

said module containing optical elements for transmitting illumination from said glass platen to said aperture and further containing fan means connected to said air inlet for blowing cooling air across said optical elements; and

a first Coanda surface means for receiving at least a portion of said cooling air from said fan means to provide an airstream flow to said aperture so that said cooling air flows out of said aperture across the entire width thereof to prevent contamination from entering said module through said aperture.

4,198,157
AUTOMATIC MICROFILM CAMERA OPERATED RESPONSIVE TO DATA INPUT AT A COMPUTER TERMINAL

Delmar R. Johnson, Barrington, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Continuation-in-part of Ser. No. 769,373, Feb. 16, 1977, Pat. No. 4,087,175. This application Mar. 13, 1978, Ser. No. 885,704
Int. Cl.[2] G03B 27/52
U.S. Cl. 355—40 **5 Claims**

1. A computer-controlled microfilm camera and image retrieval system comprising:

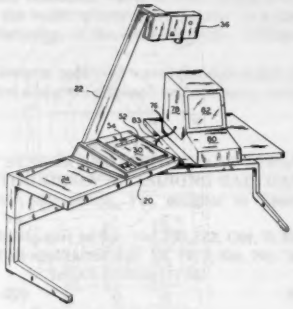
(a) a microfilm camera having means for supporting a document in a position which is convenient for an operator to read while entering data at various selected categories taken from said document into a computer terminal which is associated with a computer,

(b) means for connecting said camera to said computer terminal,

(c) means responsive to the data being entered into said computer terminal for displaying at least a document identifying character on said supporting means, adjacent said document, and within an area photographed by said camera, said character identifying the photographed document and correlating that document with the data entered therefrom into said computer terminal,

(d) means responsive to signals received at said connecting means during data entry for initiating a sequence to photograph both said document and said identifying character while said document is on said supporting means,

(e) memory means in said computer for retaining said document identifying character and said data entered from said document, said memory means and computer being responsive to an operator-initiated data entry to said computer terminal for providing said computer terminal with



identifying documents having data corresponding to said operator-initiated data entry, and

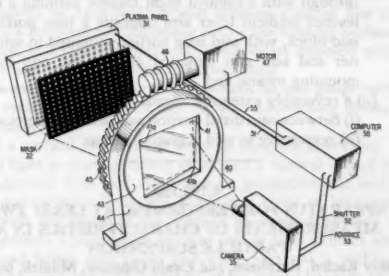
(f) means connected to said computer for retrieving and displaying the image of a selected document,

(g) whereby the identifying character of a document containing requested data is supplied by the computer to said retrieving and displaying means which displays the image of the selected document.

4,198,158
HIGH RESOLUTION DISPLAY

Kenneth C. Knowlton, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 14, 1978, Ser. No. 896,179
Int. Cl.[2] G03B 27/32; B41B 13/00; G03B 41/00
U.S. Cl. 355—54 **9 Claims**



1. A display system comprising

a plurality of selectively energizable spaced-apart display sites, and

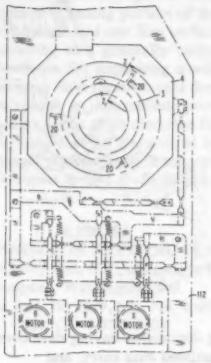
means for recording a first image of each of said sites on a record medium,

said recording means characterized by means for recording a second image of each of said sites on said record medium, each said second image of each site being recorded between first images of that site and an adjacent display site.

4,198,159
OPTICAL ALIGNMENT SYSTEM IN PROJECTION PRINTING

Rene P. Cachon, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,574
Int. Cl.[2] G03B 27/52, 27/58; G01B 11/27
U.S. Cl. 355—55 10 Claims



1. A focusing apparatus adapted for positioning a planar object in a focal plane of an optical system, comprising:

A. means for mounting said object and for positioning a planar surface thereof in parallel coincidence in said focal plane of said system;

B. at least three sensing means equiangularly disposed about the periphery of said focal plane for sensing the displacement of said surface from said focal plane;

C. at least three reversible drive means for said mounting means and equiangularly disposed below corresponding ones of said sensing means; and

D. means responsive to said sensing means for independently activating corresponding ones of said drive means for positioning said surface into coincidence with said focal plane; wherein

E. said drive means comprises

(a) a carrier for said mounting means;

(b) an elastic metal block having a kerf extending therethrough with a thinned bight thereof defining a cantilevered resilient lever arm opposite a base portion of said block, with said base portion mounted to said carrier and said arm mounted at its distal end to said mounting means; and

(c) a reversibly extensible means

(i) between said distal portion and said base portion and

(ii) responsive to said actuating means.

4,198,160
APPARATUS FOR PERFORMING AT LEAST TWO MEASUREMENTS OF CHARACTERISTICS IN A PARTICLE SUSPENSION

Volker Kachel, Puchheim, and Ewald Glossner, Münich, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Dec. 7, 1977, Ser. No. 858,310
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1976, 2656654
Int. Cl.[2] G01N 21/52, 27/08
U.S. Cl. 356—72 4 Claims

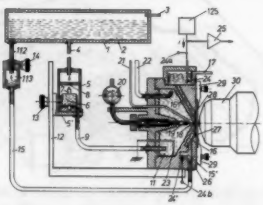
1. An apparatus for performing a measurement of the volume and the fluorescence of particles suspended in a suspension of particles, comprising:

means defining a first and second chamber and a measuring orifice interconnecting said chambers;

a first electrode disposed in said first chamber;

a second electrode disposed in said second chamber;

a capillary tube disposed in said first chamber and defining a discharge orifice at one end thereof which is located upstream of the measuring orifice, said capillary tube being coaxially, with respect to said orifice, arranged to introduce a suspension of particles into the flow of an electrolyte and through the measuring orifice, the arrangement being such that the flow of particles included



in the electrolyte takes place through the measuring orifice as a result of the pressure difference between the first and second chambers;

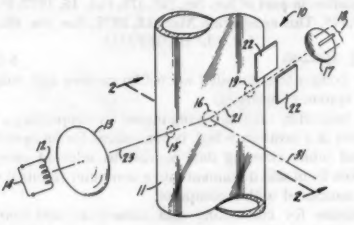
an fluorescence measuring device situated downstream of and coaxially with the measuring orifice along the path of flow of the particles;

a glass plate situated between the measuring orifice and the fluorescence measuring device, and at right angles to the axis of the measuring orifice, said glass plate being adapted to divert the flow of the particles through substantially a right-angle.

4,198,161
LOW TURBIDITY NEPHELOMETER

Paul E. Larson, Fort Collins, Colo., assignor to Hach Chemical Company, Loveland, Colo.

Filed Feb. 27, 1978, Ser. No. 881,569
Int. Cl.[2] G01N 21/22
U.S. Cl. 356—339 1 Claim

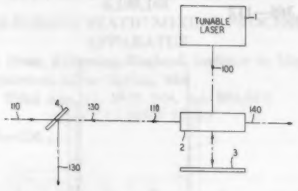


1. In a nephelometer, the combination comprising, a transparent cell for containing a liquid sample, a light for directing a beam of light into said cell, and a light detector positioned to receive light scattered at right angles from a region in the cell illuminated by said beam, said cell characterized in that either the illuminating light beam or the detected light passes through the cell wall face at an acute angle to the normal to said cell wall face.

4,198,162
TUNABLE WIDE ANGULAR APERTURE FILTER BY DEGENERATE FOUR-WAVE MIXING

Gary C. Bjorklund, West Windsor; David M. Bloom, Holmdel, and Paul F. Liao, Fair Haven, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 23, 1978, Ser. No. 908,779
Int. Cl.[2] G01B 9/02
U.S. Cl. 356—349 12 Claims



1. A wide angular aperture wavelength tunable optical filter for extracting selected wavelength components from an input image beam comprising:

a medium having a third order nonlinearity in susceptibility;

a laser source of tunable radiation having a range of wavelengths which includes the wavelengths to be selected from said input image beam and directed such that its output radiation passes through said medium;

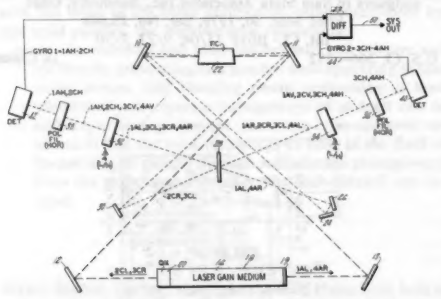
a reflector positioned so as to retroreflect radiation from said laser source after the radiation has passed through the medium thereby establishing counterpropagating pump beams in said medium, said medium being oriented so as to receive said input image beam; and

means positioned in the path of said input image beam to extract a conjugate image beam generated in said medium wherein said input image beam and said counterpropagating pump beams spatially and temporally overlap.

4,198,163
DIFFERENTIAL LASER GYRO READOUT

Joseph M. Bresman, and Harlan J. Cook, both of West Hartford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 5, 1978, Ser. No. 866,982
Int. Cl.[2] G01B 9/02; G01P 9/00
U.S. Cl. 356—350 4 Claims



1. In a method of operating a differential laser gyro in which the clockwise and anticlockwise waves of one polarization and the clockwise and anticlockwise waves of an orthogonal polarization are all combined in a mode-combining beam splitter to provide two output beams each having all four wave modes, circularly polarized waves are converted to linear polarization and the orthogonal polarizations are separated by linear polarization analyzers, and the clockwise and anticlockwise waves of each polarization are separately heterodyned, the steps of:

reflecting the clockwise waves a number of times, and reflecting the anticlockwise waves a different number of times to direct said waves to the beam splitter;

combining said waves in the beam splitter while in circularly polarized modes;

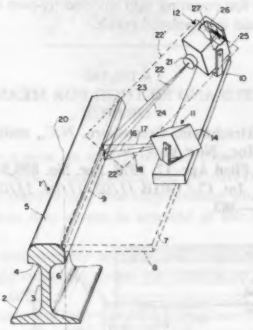
converting the combined waves in both output beams provided by the beam splitter from circular polarization to linear polarization of the same respective orthogonality; and

passing the linearly polarized waves through a pair of linear polarization analyzers disposed with the same orientation.

4,198,164
PROXIMITY SENSOR AND METHOD AND APPARATUS FOR CONTINUOUSLY MEASURING RAIL GAUGE

Clarence Cantor, Alexandria, Va., assignor to Ensco, Inc., Springfield, Va.

Continuation-in-part of Ser. No. 730,322, Oct. 7, 1976, abandoned. This application Apr. 13, 1977, Ser. No. 787,308
Int. Cl.[2] G01B 11/14
U.S. Cl. 356—375 8 Claims



1. In a rail survey vehicle, an electro-optical measurement system for accurately determining track gauge as established by the distance between directly opposite points on the gauge surfaces of the railheads of the respective rails, a succession of said points on each said railhead defining a gauge line positioned a predetermined distance below the running surface of the rail, said system comprising components disposed wholly above said running surface and comprising

A. means for establishing a light pattern on said gauge surface of each rail, each such light pattern establishing means including

(a) a vertical line array of infrared injection lasers and

(b) light projecting means to project a vertical line of light derived from said array along a projection axis inclined downwardly from said array to a point of intersection with the gauge of the railhead to establish thereon said pattern whereat said vertical line of light extends above and below said gauge line when said rail is within the expected range of deviation of the lateral position of said rail, and

B. means for sensing said light patterns, each said light pattern sensing means including an optical system having an object axis inclined downwardly and intersecting the axis of said light projection means at said gauge line when said rail is at its expected nominal position, said optical system including

(a) means for focusing an image of said pattern on an image plane which intersects said object axis whereby deviation in the lateral position of said gauge surface will cause both vertical and horizontal deviations of said image, and

(b) a multi-element linear photodiode array ignorant of

vertical deviations of the position of the image of said light pattern but sensitive to the horizontal position of said image, said linear photodiode array being horizontally disposed in said image plane at a level intersecting said object axis;

C. means for periodically scanning said linear photodiode array and to generate a data pulse upon passing at least one diode which is illuminated by said focused image, the data pulse being retained throughout the period of scan of a sequence of consecutive illuminated diodes, said scanning means including a line scan camera which produces a train of binary pulses and

D. converting means to receive and convert the binary pulse train from said scanning means to a digital display, said converting means including logic means to interpolate the middle diode in a sequence of illuminated diodes of said photodiode array and to pass the interpolated result identifying said middle diode to the display, the logic means including

(a) means for generating a series of clock pulses each representative of the time of accession of each diode in said array by said line scan camera,

(b) means for dividing said series of clock pulses by-two only when said data pulse is present, and

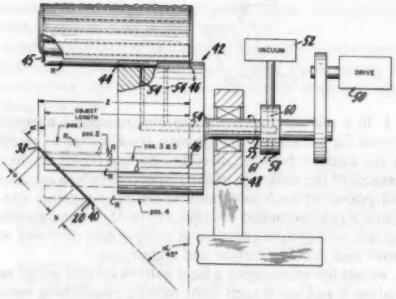
(c) means for counting said divided by-two clock pulses to attain said interpolated result.

4,198,165

APPARATUS AND METHOD FOR MEASURING AN OBJECT

Werner P. Kirschstein, Greensboro, N.C., assignor to Loew's Theatres, Inc., New York, N.Y.

Filed Apr. 12, 1978, Ser. No. 895,535
Int. Cl.[2] G01B *11/02, 11/04, 11/08*
U.S. Cl. 356—383 **7 Claims**



1. An apparatus for measuring an object comprising:

(a) a fixture rotatable about an axis and having means for holding the object such that one end of the object is located at a specified location spaced from the axis of rotation and the other end projects freely from the fixture;

(b) scanning means for producing a unidirectional scanning beam sweeping a region forming a plane, said scanning means being positioned such that the plane of the beam is oblique to the axis of rotation of the fixture and the end of the object intersects the beam at least at one point along its arc of rotation;

(c) sensing means at the terminal end of the scanned region for detecting the beam after it has passed through the scanned region; and

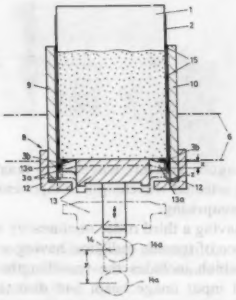
(d) means coupled to said sensing means for determining the distance between the point of intersection of the free end of the object with the beam and a reference line in the plane of the beam when the free end intersects the scan path.

4,198,166

DEVICE FOR SHAKING PACKAGES CONTAINING POWDERY OR GRANULAR MATERIAL

Josef Tüns, Dachsen, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Oct. 20, 1978, Ser. No. 953,181
Claims priority, application Switzerland, Nov. 1, 1977, 13324/77
Int. Cl.[2] B01F *11/00;* **B65B** *61/00*
U.S. Cl. 366—112 **4 Claims**



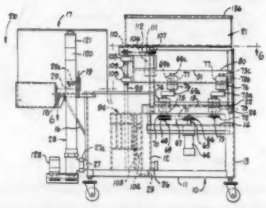
1. In a device for shaking packages each positioned with a downwardly oriented, recessed end face on an intermittently advanced conveyor having carrier elements for engaging and advancing the packages; the improvement comprising at least one vertically displaceable platform situated underneath said conveyor and having a discrete outline dimensioned for engaging the recessed end face of the individual package; means for shifting said platform into a raised state for lifting the package off the respective carrier element by the recessed end face; and means for vertically reciprocating said platform in the raised state for shaking the package as it rests on said platform by said recessed end face; the distance by which said platform is lifted into said raised state is of sufficient magnitude for maintaining the package spaced from the respective carrier element during the shaking of the package by said platform.

4,198,167

AUTOMATIC TEMPURA BATTER MIXER

Douglas O. Deal, and Michael E. Miller, both of Bellevue, Ohio, assignors to Sam Stein Associates Inc., Sandusky, Ohio

Filed Mar. 30, 1979, Ser. No. 25,668
Int. Cl.[2] B01F *15/04, 9/22, 7/30*
U.S. Cl. 366—152 **14 Claims**



1. In an apparatus for mixing batches of a liquid plus a finely divided dry solid, comprising a frame, a pot on said frame having an uninterrupted cylindrical side wall and a substantially closed bottom wall, means for adding premeasured quantities of said liquid and of said dry solid simultaneously to said pot quickly, a mixing cage having a plurality of planar faces

meeting at angular corners and having a suspension shaft rigid therewith and centrally thereof, and suspended by said frame in said pot parallel to said cylindrical side walls, means on said frame for causing orbiting movement of said shaft within said pot, said orbiting movement causing said corners of said mixing cage to travel close to but not touching said cylindrical wall of said pot, and means on said frame to cause rotation of said shaft.

4,198,168

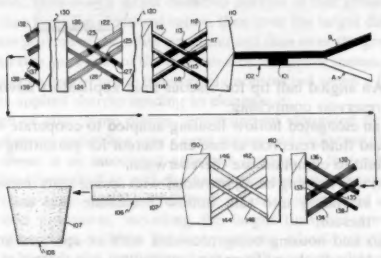
PHASE BLENDING STATIC MIXING PROCESS AND APPARATUS

Laurence R. Penn, Kettering, England, assignor to Liquid Control Incorporated, Silver Spring, Md.

Filed Apr. 12, 1978, Ser. No. 896,017

Int. Cl.[2] B01F *13/00*

U.S. Cl. 366—336 **7 Claims**



1. In a static mixer of the interfacial surface generator type for mixing plural viscous reactive components and including an inlet chamber, means for supplying into said inlet chamber a fluid stream including separate longitudinal layers of plural viscous reactive components, an outlet chamber from which is discharged an outlet stream in the form of a viscous mixture of said plural components, at least one recombination chamber positioned between said inlet and outlet chamber, all of said chambers being serially connected by stages of plural separate passageways, such that said fluid stream is successively divided into plural separate substreams by each of said stages of plural passageways, and said plural substreams are reoriented and then recombined into a main stream in the said chamber following each said stage of plural passageways, whereby said plural components are successively mixed to form said mixture, and wherein said fluid stream supplied to said inlet chamber contains periodic solid patches of one of said components, with the layer of the other component being interrupted by said solid patches, the improvement comprising:

means for blending said solid patches into said mixture and for thereby preventing said patches from appearing in said outlet stream, said blending means comprising at least selected of said separate passageways of at least one of said stages having unequal transverse cross-sectional areas, such that the total resistances to flow of the fluid of the substreams passing through said selected passageways, from the beginnings thereof to the ends thereof, are unequal.

4,198,169

TYPE DISC PRINTER

Walter Stuiber, Karben; Manfred Mansfeld; Heinz Geis, both of Frankfurt, and Friedrich Teichmann, Feucht, all of Fed. Rep. of Germany, assignors to Adlerwerke vorm. Heinrich Kleyer A.G., Nuremberg, Fed. Rep. of Germany

Filed Sep. 6, 1978, Ser. No. 939,951

Int. Cl.[2] B41J *1/30*

U.S. Cl. 400—144.2 **8 Claims**

1. A type disc printer having

a frame,

a drive shaft and a driven shaft rotatably supported in said frame,

a slip clutch coupling said drive and driven shafts,

type disc means secured to said driven shaft,

said type disc means having axially flexible radial spokes with type characters thereon,

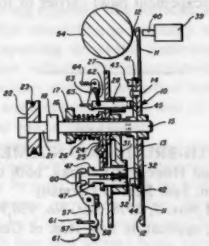
home stop means on said frame and said type disc means for releasably holding said driven shaft against rotation,

a type character stop plate having an array of angularly located character stops corresponding to type characters on said spokes,

said stops being supported for axial movement from unset to set positions,

said type character stop plate being supported on said frame for limited rotation to a final stop position from a rest position,

means for moving a selected character stop to a set position,



counterstop means on said type disc means for engaging character stops in set position and for carrying said character stop plate to said final stop position whereat rotation of said type disc means is arrested at the selected type character,

means for momentarily moving said home stop means to release said type disc means for rotation to a selected set character stop,

means for restoring said character stop plate to rest position,

means for resetting selected character stops to unset position,

an impact hammer,

and means responsive to movement of said character stop plate to its final stop position for operating said impact hammer to drive an oppositely located spoke to print, and for operating said character stop resetting means, and said characters stop plate restoring means.

4,198,170

SINGLE ELEMENT TYPING FOR LEFT TO RIGHT OR RIGHT TO LEFT LETTER FEEDING

Herbert Decker, Lauf, Fed. Rep. of Germany, assignor to Triumph Werke Nurnberg A.G., Nuremberg, Fed. Rep. of Germany

Filed Apr. 21, 1978, Ser. No. 898,957

Claims priority, application Fed. Rep. of Germany, May 13, 1977, 2721654

Int. Cl.[2] B41J *19/00*

U.S. Cl. 400—323 **3 Claims**

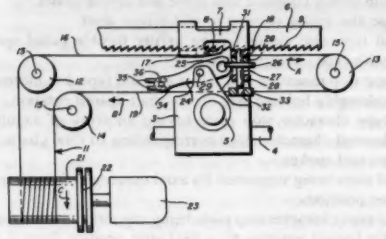
1. A single element typewriter having bidirectional drive means to move a single element type carrier in letter feed and carriage return direction parallel to a writing line, comprising

a closed loop cable system having parallel runs extending the length of a writing line, said loop being coupled to said bidirectional drive means,

an escapement pawl carrier connected in one of said loop runs,

connector means in the other of said runs,

a single element font carrier supported for movement along a writing line, and



means for selectively coupling said single element font carrier to said escapement pawl carrier or to said connector means.

4,198,171

TOOTH-BRUSH ARRANGEMENT

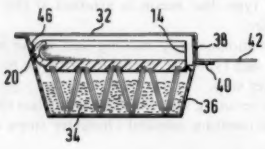
Bruno Lampka, and Hildegard Lampka, both of Steinbichel 3, D-8960 Kempten, Fed. Rep. of Germany

Filed Nov. 7, 1978, Ser. No. 958,957

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1977, 2758457

Int. Cl.[2] **A46B** *17/04, 11/00*

U.S. Cl. 401—269 **4 Claims**



1. In a tooth-brush arrangement comprising, a bristle head, said bristle head is detachably fastened to a separate handle; a receptacle containing a predetermined amount of liquid or pasty dentifrice substance sufficient for one-time use; a plurality of bristles fastened at the bristle head, said bristles on said head are immersed in said dentifrice substance; the receptacle being formed of plastic material and defined by, respectively, a bottom, front, back and side walls the walls extend from the bottom to form a cross-section substantially equal with that of the bristle head which is in circumferential contact with said side walls; the front and back walls respectively of the receptacle tightly limiting a tooth-paste chamber inside said receptacle, the improvement comprises: an extension portion of the side walls and the front walls of the receptacle, said extension portion is beyond said circumferential contact with the bristle head, whereby the upper edges of the front wall and the side walls are spaced from the bottom a distance substantially equal with the overall height of the bristle head including the bristles, and the height of the back wall is substantially equal to the height of the bristles alone, to leave an opening for insertion of the handle; a draw-off cover tightly connected with the upper edges of the receptacle; said cover is provided with a substantially rectangularly bent-off wall portion extending downwardly to the upper edge of the back wall of the receptacle and closing said opening; and said wall portion of the cover is tightly connected with the side walls and the back wall respectively of the receptacle.

4,198,172

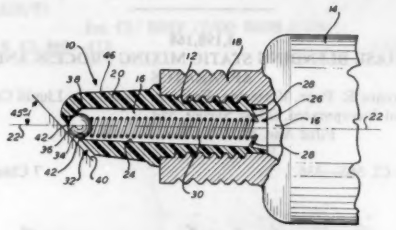
ANGLED BALL TIP FOR VISCOUS FLUIDS

Ira P. Meislik, Montclair, N.J., assignor to Tri-Chem de Puerto Rico, Inc., Vega Baja, P.R.

Filed Apr. 20, 1978, Ser. No. 898,303

Int. Cl.[2] **B43K** *7/10*

U.S. Cl. 401—214 **7 Claims**



1. An angled ball tip for viscous fluid applicators having a fluid reservoir comprising:

A. an elongated hollow housing adapted to cooperate with said fluid reservoir at one end thereof for permitting said fluid to communicate therebetween,

(i) said housing being provided with spring seats inwardly extending into said hollow proximate said one end thereof,

(ii) said housing being provided with an aperture angularly displaced from the longitudinal axis thereof at the other end,

(iii) said housing further including an integral wedge portion extending into said hollow proximate said aperture;

B. a ball disposed within said housing hollow at said other end, said ball being freely rotatable and recedable into said hollow housing, and larger than said angularly displaced aperture; and

C. spring means disposed along said longitudinal axis and within said housing hollow, operatively cooperating with said spring seats and in intimate contact with said ball for urging said ball into simultaneous contact with said wedge portion and said angularly disposed aperture said spring receiving pressure contact forces generated by contact with a cooperating surface via said wedge whereby said viscous fluid is capable of flowing from said reservoir through said hollow and said aperture upon pressure contact between said ball and the cooperating surface.

4,198,173

MECHANICAL SPLICES IN ARMORED ELECTRICAL CABLES AND THE LIKE AND METHOD AND APPARATUS FOR FORMING THE SAME

James N. Zehren, Bartlesville, Okla., assignor to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 616,318, Sep. 24, 1975, abandoned. This application Jul. 18, 1977, Ser. No. 816,493

Int. Cl.[2] **F16D** *1/00;* **H01R** *5/00*

U.S. Cl. 403—24 **1 Claim**

1. A mechanical splice between a pair of elongated sections of electrical cable having insulated electrical conductors that are joined by an electrical splice, comprising a pair of grommets, flexible sleeve means separate from the grommets and a pair of clamp means;

each grommet being substantially cylindrical and comprising plural parts which mate to form an axial opening receiving an end portion of one of said elongated sections, each grommet having means for forcing the parts of the grommet together on the associated end portion to grip the associated end portion, the cross-sectional dimensions of said axial opening being smaller than the cross-sectional dimensions of the associated end portion when the grommet parts are mated before the grommet is mounted on the associated end portion, whereby the grommet may be securely mounted thereon, each grommet having an external circumferential groove adjacent to a larger diameter portion of the grommet;

said flexible sleeve means receiving therein at opposite ends thereof the end portions of said elongated sections on which the grommets are mounted, said sleeve means extending from one end thereof over a groove of one grommet, then over a larger diameter portion of that grommet, then over the electrical splice, then over the larger diameter portion of the other grommet and then over the groove of that grommet to the other end of the sleeve means, said sleeve means being transversely constricted when a force is applied thereto tending to elongate it;

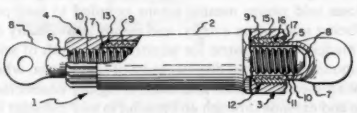
each of said clamp means comprising an elongated flexible element encircling said sleeve means and tightened thereabout in an associated grommet groove, so that when a load is applied to said elongated sections tending to move them apart, said flexible sleeve means is constricted about said grommets, including the larger diameter portions thereof, and about the end portions of said elongated sections, with the sleeve means relieving the electrical splice of said load.

4,198,174

TELESCOPIC LOAD BINDER AND METHOD OF ASSEMBLY

Richard A. Borowiec, Grand Island, and Kenneth D. Schreyer, Clarence, both of N.Y., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,347
Int. Cl.[2] F16B *7/06*; F16G *11/12*
U.S. Cl. 403—44 **5 Claims**



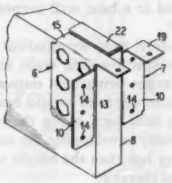
1. A load binder (1) of the type having an integrally formed axially extending tubular body (2) with first and second end portions (3,4) at first and second opposite ends thereof, said end portions having threads (5,6) of opposite handedness on their respective inner surfaces, and including first and second axially extending threaded members (7,8) with mating exterior threads (9,10), adapted to be threaded into the respective end portions (3,4), said first member (7) having an axially extending void (11) adapted to telescopically receive therewithin said second member (8), said second member (8) having an outside diameter smaller than the inside width of said void (11), characterized in that said first end portion (3) includes a cylindrical insert (12) having said thread (5) formed on its inner surface, said cylindrical insert (12) being fixedly inserted into said axially extending tubular body (2) at its first end (5), said load binder further including one or more axially extending recesses disposed around the exterior circumference of said second end portion (4), said recesses adapted to engage with a wrench for turning said tubular body (2).

4,198,175

TIMBER CONNECTORS

Wayne A. Knepp, Morton, and David A. Fehr, Roanoke, both of Ill., assignors to Morton Buildings, Inc., Morton, Ill.

Filed Oct. 3, 1978, Ser. No. 948,159
Int. Cl.[2] F16B *7/00*
U.S. Cl. 403—191 **15 Claims**



1. A timber having opposite side surfaces, a top surface, and an end adapted for connection in assembly with a supporting member in a supporting structural framework in a building under construction, wherein the improvement comprises:

a pair of connectors each having a first body portion firmly attached to a respective opposite one of said side surfaces adjacent said end of said timber;

each of said connectors having a second portion extending in a common plane with its first body portion and projecting substantially beyond said end of the timber;

deformation means providing a line of weakness located between each of said first and second body portions and along which line said second body portion of each connector is adapted to be bent substantially accurately into substantially coplanar relation to the other second body portion at substantially right angles away from the adjacent timber side surface to provide lateral wings adapted to be secured to said supporting structure framework; and

each of said connectors also having a factory bent downwardly facing supporting flange which remains in substantially the same plane and projects longitudinally beyond said end of said timber for overlying said supporting structure framework in timber-supporting and orienting relation in the assembly;

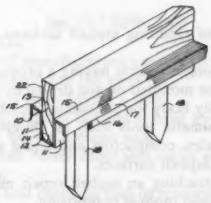
whereby said timber may be stacked and bundled with other like timbers and transported to the job site as lumber is usually handled without interference of said connectors with bundling and stacking of the timbers.

4,198,176

CONCRETE EXPANSION JOINT FORMING STRUCTURE

Jack Bentz, Boise, Id., assignor to Delta National, Inc., Boise, Id.

Filed Sep. 22, 1978, Ser. No. 944,701
Int. Cl.[2] E01C *11/04*
U.S. Cl. 404—68 **3 Claims**



1. A concrete expansion joint-forming structure comprising: an elongated bent metallic sheet having a constant cross-sec-

tional configuration presented continuously along its length;

said sheet including a central open longitudinal trough of rectangular configuration having two identical parallel longitudinal side walls spaced transversely apart, each side wall having first and second parallel longitudinal edges, the respective first edges of the side walls being integrally joined to a base wall perpendicular to the side walls;

a pair of oppositely bent longitudinal flanges integrally joined to the respective side walls at the second edges thereof, said flanges being bent outwardly from the side walls in directions opposite to said base wall;

a longitudinal lip bent back along the outer edge of each flange and partially overlapping the side walls, the height of each lip being less than the height of the adjacent side wall overlapped thereby;

each of said side walls, base wall, flanges and lips being continuous and uninterrupted throughout the length of the bent sheet;

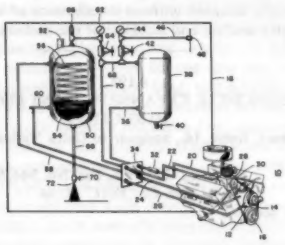
whereby the joint forming structure may be fixedly supported from beneath prior to pouring of a concrete slab at each side thereof by placing the inverted trough upon upright supports received therein with the base wall set even with the intended upper surface of the slab or alternatively by resting the flanges upon upright supports with the trough in an upwardly open orientation, recessed beneath the intended upper surface of the slab for receiving an exposed joint material, to thereby provide a metal expansion joint interlocking the subsequently poured concrete having a continuous uninterrupted trough configuration for carrying water to the side of the resulting poured structure.

4,198,177

METHOD AND APPARATUS FOR REPAIR OF ASPHALT SURFACES

Louis M. Ray, Jr., Rowlett; George R. Littrell, Jr., Garland; Arliff E. Buckland, Jr., Alto, and Gordon D. Brett, Sherman, all of Tex., assignors to Collier and Associates, Cleveland, Ohio

Filed Oct. 26, 1978, Ser. No. 954,828
Int. Cl.[2] E01C *19/08*
U.S. Cl. 404—75 **18 Claims**



13. A method of repairing asphalt surfaces comprising the steps of:

a. providing a single vehicle having a propulsion means, an air compressor mounted on and driven by said propulsion means, a utility body for containing asphalt paving material and pneumatic tools such as chisels, hammers, air pressure nozzles, compactors and liquid spraying wands for repair of asphalt surfaces,

b. removably attaching an asphalt repair module frame to said vehicle, said module comprising:

(i) a first tank attached to said frame for storing pressurized air,

(ii) means removably coupling said first tank to said compressor for receiving pressurized air therefrom,

(iii) a second tank attached to said frame for receiving a liquid for use in asphalt applications,

(iv) heating means attached to said second tank in heat transfer relationship with said liquid used for asphalt applications,

(v) means coupling pressurized air from said first tank to said second tank to pressurize said second tank, and

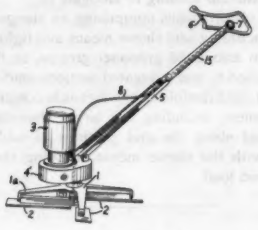
c. selectively attaching said pneumatic tools to said first and second tanks for utilizing said compressed air and said liquid in said tanks to shape, clean, seal and patch an asphalt surface whereby one person may transport and use the materials necessary to repair said asphalt surface.

4,198,178

CONCRETE FLOOR FINISHER

Per Carlstrom, Karlskrona; Bo Lundberg, Malmo, and Gert Persson, Lyckeby, all of Sweden, assignors to Dynapac Maskin AB, Solna, Sweden

Filed Jun. 27, 1978, Ser. No. 919,467
Int. Cl.[2] E01C *19/22*
U.S. Cl. 404—112 **11 Claims**



1. In a machine for finishing concrete comprising a rotor hub, a plurality of rotor arms on said hub for rotation about an axis, a blade pivotable on each of said arms, means for driving said rotor hub, and adjusting means for varying the pitch of said blades, the improvement wherein said adjusting means comprises cylinder means located coaxially with said axis and fixed to said hub, a piston disposed in said cylinder means and axially displaceable therealong, wherein said cylinder means encloses said piston means, means coupled to said piston for displacing said piston axially, and means individually coupling said blades to said piston for adjusting the pitch of said blades in response to the axial displacement of said piston, wherein the coupling means for each said blade is rigidly connected to said blade and extends through an opening in said cylinder means to engage directly said piston.

4,198,179

PRODUCTION RISER

Floyd T. Pease, London, England; Donald R. Ray, Houston, Tex.; Riddle E. Steddum, Houston, Tex., and Bruce L. Crager, Houston, Tex., assignors to The Offshore Company, Houston, Tex.

Filed Aug. 11, 1978, Ser. No. 932,865
Int. Cl.[2] B63B *35/44*; E21B *7/12*; B63B *21/00*
U.S. Cl. 405—195 **12 Claims**

1. A marine riser for connecting from a tension moored floating structure to a submarine, mud line suspended, casing and casing hanger, comprising

a tubular riser,

a flexible joint,

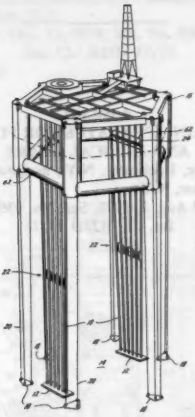
means connecting the flexible joint to the casing near the casing hanger,

means connecting the tubular riser to the flexible joint,

said tubular riser extending from said flexible joint to the floating structure,

means on said floating structure for tensioning said tubular riser,

first means for providing lateral support for said tubular riser



from said floating structure at water depths greater than fifty feet, and

second means on the floating structure for providing lateral support for said tubular riser from said floating structure.

4,198,180

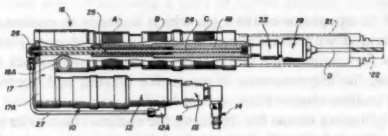
THRUST CONTROLLED DRILLING APPARATUS

Matti I. Schultz, Maryland Heights, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 11, 1978, Ser. No. 904,999

Int. Cl.[2] B23B *39/00*

U.S. Cl. 408—9 **8 Claims**



2. In thrust controlled drilling apparatus for moving a drill through an assembly of materials having different hardness characteristics, the combination of a spindle, motor means, drive means operatively interconnecting said spindle and motor means for simultaneously rotating and longitudinally feeding said spindle toward the material assembly, a drill supporting chuck, drill thrust sensor means interconnecting said chuck and spindle, governor means for said motor means, governor speed control means operatively connected to said governor means, said governor speed control means having a governor adjusting element, resilient means acting on said element to adjust the governor for lower speed, a source of air under pressure acting on said adjusting element in a direction opposing said resilient means and normally adjusting the governor for higher speed, said drill thrust sensor means including a body having a passage open to atmosphere, a valve element operatively movable in said passage to open said passage, resilient means in said body normally moving said valve element to close said passage, and an air flow connection between said governor adjusting element and said passage, said air flow connection permitting escape of air to atmosphere at said valve element and a consequent adjusting of said governor to lower speed.

4,198,181

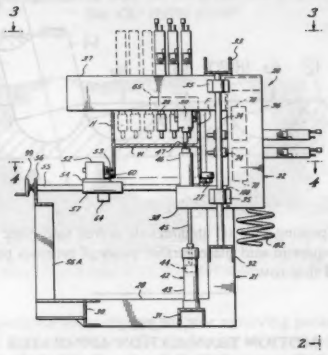
APPARATUS FOR DRILLING HOLES IN "H" BEAMS

James M. Smelser, 221 Tilden St., Pasadena, Tex. 77506

Filed Sep. 25, 1978, Ser. No. 945,092

Int. Cl.[2] B23B *39/18*

U.S. Cl. 408—42 **8 Claims**



1. Apparatus for drilling holes in a web and a flange of an H-beam, comprising a framework including a first section for receiving a beam as it is moved horizontally thereacross by means of conveyors at its opposite ends, and a second section mounted on the first section for guided, vertical movement with respect thereto, means including vertical drills on the second section for drilling holes in the web of the beam means including horizontal drills on the second section for drilling holes in a flange of the beam on opposite sides of the web thereof, means for moving the second section vertically with respect to the first section so as to position the vertical drills above the path of the web of the beam in order that the beam may be moved across the first section, means on the second section for engaging the bottom side of the web, as said section is raised from its position beneath the vertical drills, the means for moving said second section providing an upwardly directed, yieldable force which maintains said engaging means in contact with the bottom of the web without lifting the beam, and means for holding the beam in a fixed position vertically and horizontally of the second section as said holes are drilled in said web and flange.

4,198,182

METHOD OF MANUFACTURING A MOULD FOR PRODUCING A LAMP LENS ELEMENT

Stanley Green, Warley, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 719,307, Aug. 31, 1976, abandoned. This application Apr. 19, 1978, Ser. No. 897,875

Claims priority, application United Kingdom, Sep. 20, 1975, 38691/75

Int. Cl.[2] B23C *3/00*

U.S. Cl. 409—132 **15 Claims**

1. A method of manufacturing a mould for producing a lamp lens element, comprising the steps of:

(a) providing a plate having a face;

(b) providing a cutter defined at least by part of a body of revolution having a major axis;

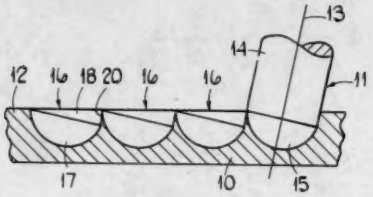
(c) rotating said cutter about said major axis of said body of revolution;

(d) inclining said cutter so that its rotation axis is inclined at an acute angle to said face of the plate;

(e) burying said cutter in said face so as to cut in said plate a recess through which said rotation axis passes, the recess having a concave surface portion defined by part of said

body of revolution, said concave portion having an axis which is inclined at an acute angle to said face of said plate and passes through the recess;

(f) repeating step (e) at intervals along said plate so as to produce a first row of recesses therein; and



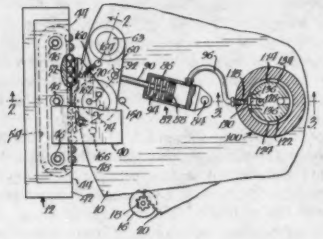
(g) repeating step (f) at intervals across said plate so as to produce in said plate further rows of recesses parallel to said first row.

4,198,183

MOTION TRANSLATION APPARATUS

Kenneth L. Kummer, 105 E. Foster, Roselle, Ill. 60172; Heinz O. Kramer, 215 S. Bloomingdale Rd., Bloomingdale, Ill. 60108; Stephan Weyeneth, Rehbuehlstrasse 29, 8610 Uster, Switzerland, and Claus Kowitz, Uhlandstrasse 1, Bad-Ditzenbach, Fed. Rep. of Germany

Filed Nov. 1, 1978, Ser. No. 956,592
Int. Cl.[2] B23C *1/14*; B23Q *1/18*
U.S. Cl. 409—132 **15 Claims**



15. The method of moving a workpiece through a predetermined non-circular machining path comprising the steps of:

A. mounting a movable guideway member on a rotatable carriage for circular movement therewith, for simultaneous radial movement perpendicular to the axis of rotation of the carriage and for simultaneous pivotable movement with respect to said carriage;

B. fixedly securing the workpiece to said movable guideway member;

C. providing a stationary guideway adjacent said carriage and securing a machining tool to said stationary guideway;

D. rotating said carriage about its axis through a predetermined arc;

E. moving said guideway member radially relative to said carriage axis and forcing said movable guideway member against said stationary guideway;

F. pivoting said movable guideway member relative to said carriage while in contact with said stationary guideway as said movable guideway member is carried by said rotating carriage for said predetermined arc of rotation whereby said workpiece contacts and is machined by said machining tool; and

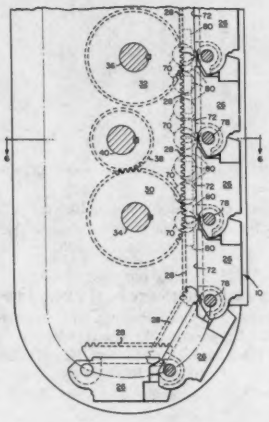
G. thereafter removing said workpiece from said movable guideway member from a position beyond said predetermined arc.

4,198,184

ENDLESS CHAIN APPARATUS FOR FORMING SPUR AND HELICAL GEARS

Thomas A. Deprez, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Aug. 2, 1978, Ser. No. 930,252
Int. Cl.[2] B23D *37/18*
U.S. Cl. 409—262 **3 Claims**



1. In apparatus of the type which includes an endless chain provided with stock removing tools arranged in at least one row for contacting a workpiece and for removing stock therefrom, the improvement in means for driving and controlling the endless chain characterized by

tightening means for stiffening the endless chain as its passes through a work zone in which its tools make contact with a workpiece, said tightening means including

a pair of gears mounted in meshing contact with the endless chain in spaced apart positions which define a flat plane in the cutting direction of movement of the endless chain, each of the gears of said pair of gears being mounted and fixed to a separate shaft, and including

a third gear mounted on a main drive shaft for imparting driving moments to said pair of gears and endless chain,

a fourth gear carried on said main drive shaft,

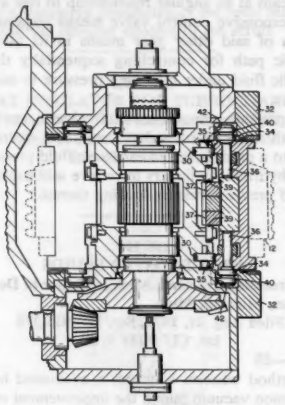
a fifth gear carried on one of the shafts for one of said pair of gears, said gears being arranged so that said third gear meshes with and drives one of said pair of gears while said fourth gear carried on said main drive shaft is simultaneously rotated therewith, said fourth gear being arranged to mesh with said fifth gear fixed to the shaft associated with the other of said pair of gears, and wherein said fourth gear is releasably secured in its connection to said main drive shaft, so that the gear train can be adjusted and the articulated links of the endless chain can be stretched and tightened in the flat plane defined between the driven members, and

driving means for moving said driven members in synchronism with each other.

4,198,185
METALWORKING APPARATUS HAVING IMPROVED MEANS FOR SUPPORTING AND GUIDING AN ENDLESS CHAIN

Thomas A. Deprez, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Oct. 12, 1978, Ser. No. 950,908
Int. Cl.[2] B23D *37/18*
U.S. Cl. 409—262 10 Claims



1. Metalworking apparatus of the type which includes an endless chain assembled from a plurality of articulated links and which further includes a housing for supporting the endless chain and for defining a path of travel passing through a work zone where stock removal tools carried by the articulated links can engage one or more workpieces as the endless chain is driven through the work zone, characterized by

a supporting surface in said work zone area of the housing firmly supporting the endless chain as portions of the endless chain are driven through the work zone,

gib means carried adjacent said work zone for pressing the endless chain into firm contact with said supporting surface as the endless chain advances through the work zone part of its travel,

guide surfaces provided in said housing guiding the endless chain in its travel into and out of the work zone,

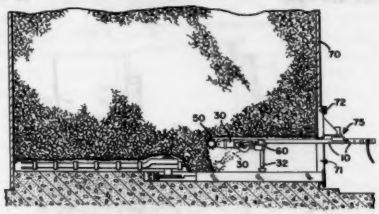
a first set of rollers carried by the endless chain in positions for contacting said gib means so that the endless chain is pressed into firm contact with said supporting surface as said first set of rollers advances into rolling contact with the gib means, and

a second set of rollers carried by the endless chain in positions which prevent contact of the second set of rollers with the gib means but which provide for rolling contact with said guide surfaces, the relationship of said first set of rollers to said gib means and of said second set of rollers to said guide surfaces being such that the rollers of said first set of rollers rotate in one direction as they make rolling contact with the gib means while the rollers of the second set of rollers rotate in an opposite direction as they make contact with said guide surfaces, to thereby eliminate the need for any given set of rollers to reverse direction of rotation while being carried along an endless path of travel in the apparatus.

4,198,186
SILO DIG OUT TOOL

John A. Holdren, Columbus, and Raymond S. Holdren, West Liberty, both of Ohio, assignors to Holdren Brothers, Inc., West Liberty, Ohio

Continuation of Ser. No. 809,782, Jun. 24, 1977, abandoned.
This application Dec. 26, 1978, Ser. No. 973,119
Int. Cl.[2] B65G *65/48*
U.S. Cl. 414—308 7 Claims

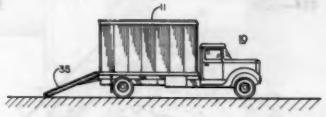


1. A portable silage dig out tool for removing packed silage material from the bottom of a silo having an access port in the lower portion of the outer wall thereof, comprising a housing including an elongated arm having an inner end adapted to be manually inserted and withdrawn through said port and having an outer end extending outside of the silo for manual manipulation, a supporting leg on the inner end of said housing mounted in depending relation from said housing and slidable on the floor of the silo, articulated power means on the inner end of said housing inwardly of said leg, cutter means carried by the innermost end of said power means coupled with and operable by said power means to cut into and remove said material, said cutter means including a pair of axially aligned drums each having a series of cutter teeth mounted on the surface thereof, and means for swinging said power means and cutter means together to progressively attack and remove said packed material.

4,198,187
RAMP AND RAMP CARRIER FOR TRUCKS AND THE LIKE

Elton E. Mountz, Morgantown, Pa., assignor to Morgan Trailer Mfg. Co., Morgantown, Pa.

Filed Jul. 17, 1978, Ser. No. 925,301
Int. Cl.[2] B60P *1/00*
U.S. Cl. 414—537 9 Claims



1. A ramp and ramp carrier for trucks and the like having a truck frame and a truck body thereon comprising

spaced longitudinally extending truck frame rails forming a part of the truck frame,

spaced longitudinally extending body rails interposed between the truck frame rails and the truck body and superposed directly above on said truck frame rails,

said body rails comprising facing channels supporting the body and providing an unobstructed ramp trackway,

members disposed exteriorly of the body rails and at the outer faces of the rails for retaining said truck frame rails and said body rails in assembled relation, and

a ramp disposed between said body rails and supported tiltably by said body rails at its inner end for movement inwardly to a storage position and outwardly to an ex-

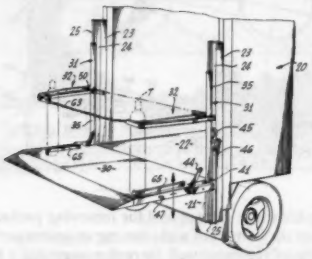
tended position for use with its inner end engaged with the truck body and its outer end on the ground.

4,198,188

LOAD ELEVATOR MECHANISM FOR UNSTABLE LOADS

William V. Perkins, 927 Crescent Dr., Monrovia, Calif. 91016

Filed Apr. 7, 1977, Ser. No. 785,647
Int. Cl.[2] B60P 1/44
U.S. Cl. 414—545 **10 Claims**



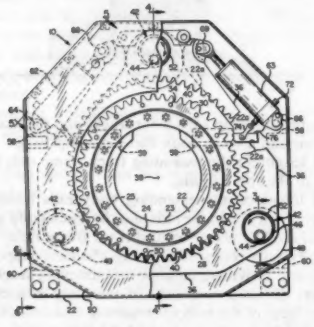
1. A foldable load elevator comprising:
a supporting framework;
a vertically elongate rigid member mounted on said framework for vertical movement;
a platform having means on a forward edge for pivotally connecting said platform to the lower end of said member for movement of said platform between a horizontally rearwardly extending load bearing position and an upwardly vertically extending folded position;
a gravitationally biased retainer bracket pivotally connected to the upper end of said member movable between a horizontally rearwardly extending position and an upwardly vertically extending folded position; and
means for automatically folding and unfolding said retainer bracket concurrently with and as a function of folding and unfolding pivotal movement of said platform.

4,198,189

LIFT TRUCK ROTATOR WITH PRESSURE-RELIEVED VALVING

Ronald A. Brudi, and Daniel F. Chase, both of Longview, Wash., assignors to Brudi Equipment, Inc., Kelso, Wash.

Filed Jul. 27, 1978, Ser. No. 928,590
Int. Cl.[2] B66F 9/18
U.S. Cl. 414—620 **13 Claims**



1. In a rotator attachment for a lift truck of the type including an inner gear means with external teeth and surrounding outer gear means with a greater number of internal teeth engaging said external teeth, the teeth of both gear means being in surrounding relationship to an axis of rotation, one of the gear means being mounted by rotational mounting means for rotation about said axis for rotating a connected load, the other gear means being mounted by eccentric mounting means to a frame for movement in a gyratory eccentric path about said axis to rotate said one gear means about said axis;
a drive means for moving said other gear means in said gyratory eccentric path comprising:
multiple hydraulic cylinders connected at one set of ends to said frame and at their opposite set of ends to said other gear means at an angular relationship to one another,
position-responsive control valve means responsive to the position of said other gear means in its said gyratory eccentric path for controlling sequentially the flow of hydraulic fluid under operating pressure to said multiple cylinders,
and fluid pressure-responsive relief valve means in association with said control valve means and operable in response to a predetermined excessive fluid pressure in any of said hydraulic cylinders to relieve said excessive pressure and prevent pressure-locking therein.

4,198,190

VAPOR BOOSTER FLUIDS

Eugene D. Groenhof, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 21, 1978, Ser. No. 935,273
Int. Cl.[2] F04F 9/00
U.S. Cl. 417—55 **1 Claim**

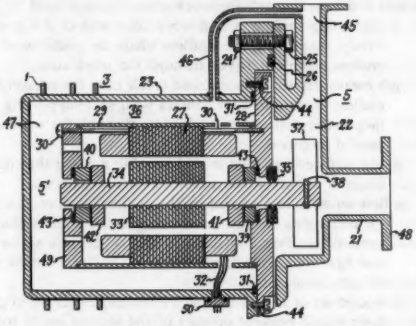
1. In a method wherein a system is evacuated by a vapor booster diffusion vacuum pump, the improvement comprising entraining gas in a stream of vapors of an organosilicon fluid consisting essentially of octamethyl-3,5-diphenyltetrasiloxane.

4,198,191

VAPORIZATION COOLED DIELECTRIC FLUID PUMP

Linden W. Pierce, Rome, Ga., assignor to General Electric Company

Filed Apr. 7, 1978, Ser. No. 894,543
Int. Cl.[2] F04B 39/06
U.S. Cl. 417—369 **21 Claims**



1. A hermetically sealed motor driven pump for vapor cooled transformers comprising:
a motor housing containing an electric motor and a dielectric fluid for cooling the motor;
an impeller housing connected with the motor housing having an intake port, scroll, and discharge port and containing an impeller coupled with the motor by means of a shaft;
sealing means between the impeller housing and the motor housing to prevent fluid transfer between the impeller housing and the motor housing;

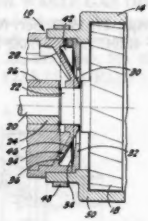
a conduit intermediate the discharge port and the motor housing for providing pressure within the motor housing:
a stator secured to a mounting plate and an end bell secured to the stator;
a front bearing retained in the mounting plate and a rear bearing retained in the end bell;
a shaft for connection within the motor and attached to the impeller at one end;
a rotor attached to the shaft within the motor stator to define an annular gap between the rotor and stator for rotation of the rotor; and
thrust surfaces attached to the shaft to contact the bearings and for maintaining orientation of the rotor relative to the stator and the impeller relative to the scroll.

4,198,192

HEAT INSULATOR FOR TURBOCHARGER

James W. Webb, 29565 Ruus Rd., Hayward, Calif. 94544

Filed Jul. 13, 1978, Ser. No. 924,349
Int. Cl.[2] F01D *25/08*
U.S. Cl. 417—373 **5 Claims**



1. A turbocharger combination including a turbine connected to an air compressor having a common shaft supported by a bearing, the improvement comprising:
a. a bearing housing having one end portion adjacent the turbine, said bearing housing one end portion including an end surface;
b. shroud means for heat shielding said one end portion of said bearing housing from the heat generated by the turbine;
c. a spacer interposed said shroud means and said bearing housing, said spacer having a first and second plate, said first plate angularly connected to said second plate, forming a chamber therebetween; and
d. means for causing engagement of said one end of said bearing housing and said shroud means by said spacer.

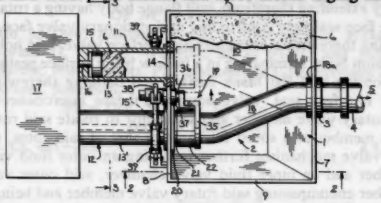
4,198,193

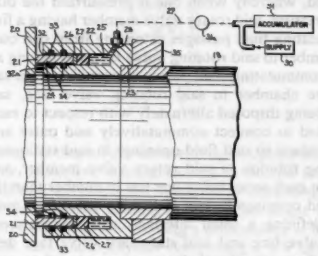
AUTOMATIC WEAR COMPENSATION APPARATUS FOR CONCRETE PUMPING HOPPER APPARATUS

Robert E. Westerlund, 10904 N. Westview 41W, Mequon, Wis. 53092, and James F. Walters, N77 W22133 Wooded Hills Dr., Sussex, Wis. 53089

Filed May 12, 1978, Ser. No. 905,162
Int. Cl.[2] F04B *15/02, 7/00*
U.S. Cl. 417—517 **16 Claims**

1. A concrete hopper valve apparatus for pumping of concrete from a bulk supply hopper means having a pair of adjacent pump means with adjacent pump openings into the hopper means and a wear plate means defining a substantially smooth inner wall surrounding said openings, comprising a valve line means, said valve line means having a pivotal mount means adapted to support a line in the hopper means about an outlet means and having an inlet end means swinging between the openings, said inlet end means of the valve line means being spaced from said wear plate means to define a space between the line means and wear plate means and having an annular recess opposing said wear plate means, a seal ring having an inner end slidably mounted within said recess and having a greater length than said space between said inlet end means and said wear plate means, and force means urging said seal





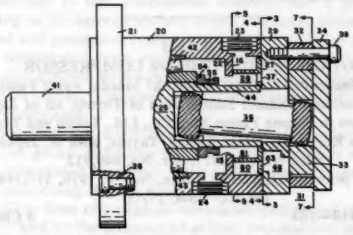
ring outwardly into sliding, sealing engagment with said wear plate means.

4,198,194

ROTARY PISTON MACHINE WITH WEAR SURFACE ON ROTARY VALVE MEMBER

George V. Woodling, 22077 Lake Rd., Rocky River, Ohio 44116

Filed Jun. 7, 1978, Ser. No. 913,321
Int. Cl.[2] F01C *1/02, 21/12;* **F03C** *3/00;* **F16K** *3/26*
U.S. Cl. 418—61 B **10 Claims**



1. A rotary piston machine having first and second fluid ports and including a stator and a rotor forming expandable and contractible piston chambers, a fluid valve mechanism for commutatively connecting said piston chambers to said fluid ports and including a flat blank surface, a rotary valve member having a longitudinal axis about which it may be rotated, a stationary valve member having a stationary valve face disposed substantially parallel to said flat blank surface and being axially spaced therefrom, said stationary valve member being positioned on said longitudinal axis between said rotary valve member and said piston chambers, and being provided with a plurality of fluid openings arranged in a ring about said longitudinal axis and in constant fluid communication with said piston chambers, said rotary valve member being disposed

between said stationary valve face and said flat blank surface and comprising a flange body and a hollow extension body axially extending therefrom, said flange body having a rotating valve face sealingly confronting said stationary valve face and defining therewith a commutating interface valve, said hollow extension body terminating in a hollow blank surface sealingly confronting said flat blank surface and defining therewith a blank interface seal, valve actuating means interconnecting said rotary valve member and said rotor to rotate said rotary valve member at a speed the same as that of said rotor, said fluid valve mechanism further including an outer fluid valve chamber and an inner fluid valve chamber, said outer valve chamber encompassing said rotary valve member and being in constant fluid communication with said first fluid port, said inner valve chamber being within said rotary valve member and in constant fluid communication with said second fluid port, said outer and inner valve chambers being oppositely pressurized, whereby when one is pressurized the other is at exhaust pressure, said rotary valve member having a first series of commutating fluid passages extending from said outer fluid valve chamber to said rotating valve face and having a second series of commutating fluid passages extending from said inner fluid valve chamber to said rotating valve face, said fluid passages being disposed alternately with respect to each other and adapted to connect commutatively said outer and inner valve chambers to said fluid openings in said stationary valve face during rotation of said rotary valve member, said fluid passages in each series being one less in number than the number of fluid openings in said stationary valve face, said blank surfaces defining a small interface area therebetween, said rotating valve face and said stationary valve face defining a large interface area therebetween as compared to said small interface area, said rotating valve face and said stationary valve face having a hardness value substantially free from frictional wear, said flange body having an outer flange surface exposed to fluid pressure in said outer valve chamber and having an inner flange surface exposed to fluid pressure in said inner valve chamber, whereby said rotary valve member is subject to an axial fluid force in a direction tending to urge said rotating valve face towards said stationary valve face and tending to separate said hollow blank surface away from said flat blank surface, one of said blank surfaces comprising a master surface disposed to resist frictional wear during rotation of said rotary valve member and the other of said blank surfaces comprising a wear-in servant surface disposed to be less resistant to frictional wear than that of said master surface and being wearable thereby.

4,198,195

ROTARY FLUID PUMP OR COMPRESSOR

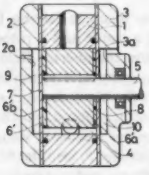
Hiroshi Sakamaki, Tochigi; Toshiyuki Maeda, Ageo; Fumihiro Ushijima, and Tadashi Saitou, both of Toyota, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Nov. 9, 1977, Ser. No. 849,912

Claims priority, application Japan, Nov. 9, 1976, 51-134448

Int. Cl.[2] **F04C** *27/00*

U.S. Cl. 418—133 **3 Claims**



1. In a rotary fluid pump of the type including a rotor supported in a rotor chamber defined by a stator housing and two end heads, two flexible side plates each interposed between the housing and each of the end heads to form end chambers between the side plates and the end head, the end chambers being supplied with a pressure higher than that in the rotor chamber so as to bring the side plates into close contact with the opposite side faces of the rotor during rotor operation, the improvement wherein the rotary fluid pump comprises flexible metal side plates and the rotor is formed of a metal member having affixed to its opposite side faces rotor plates which are about 0.3 to 2 mm thick and are formed of a synthetic resin material having an abrasion resistance lower than that of said metal.

4,198,196

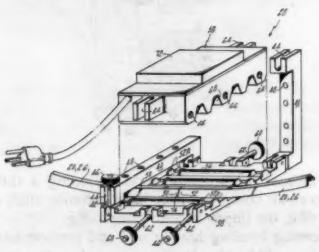
APPARATUS FOR SPLICING ENDS OF A GROOVED SHEAVE INSERT MEMBER

Janis J. Cilderman, W. Simsbury, Conn., and Joseph G. Kirincich, Saddle River, N.J., assignors to Otis Elevator Company, New York, N.Y.

Filed Apr. 17, 1979, Ser. No. 30,986

Int. Cl.[2] **B29C** *1/14, 27/00;* **B29H** *7/22*

U.S. Cl. 425—123 **4 Claims**



1. An apparatus for use in joining the ends of a length of sheave insert by curing material therebetween, the insert having a groove extending the length thereof, comprising:

a base containing an elevated guide thereon for receiving the ends, said guide being adapted to fit congruently into said groove and being substantially straight so that the ends are colinear when disposed thereon, and

a heated mold removably mounted on said base and containing a slot which fits congruently around the ends when said mold on said base, for applying heat to the material being cured and molding it to the shape of the insert.

4,198,197

DEVICE FOR PELLETIZING AND DOSED FEEDING-OUT OF FODDER WITH VARYING DEGREE OF MOISTURE

Gunnar Hedengerg, Trollhättan, Sweden, assignor to AB Fyrtornet, Stockholm, Sweden

Filed May 9, 1978, Ser. No. 904,289

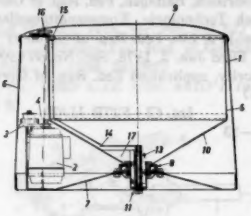
Claims priority, application Sweden, May 13, 1977, 7705593; Sep. 26, 1977, 7710718

Int. Cl.[2] **425***/376 R;* **B29F** *3/00;* **A01F** *29/00*

U.S. Cl. 425—305.1 **9 Claims**

1. A device of the pelletizing fodder, comprising: a container and screw housing attached thereto, both said container and said housing being supported for rotation together about a

vertical axis and about a fixed screw member, said screw member being adapted to feed fodder from said container to a



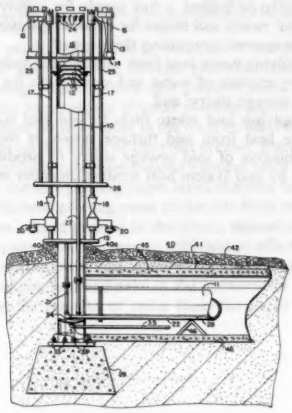
perforated extrusion die, and fixed cutter means cooperatively associated with said die to cut said fodder into pellets.

4,198,198

FLARES FOR WASTE GAS DISPOSAL

John F. Straitz, III, Meadowbrook, Pa., assignor to Combustion Unlimited Incorporated, Jenkintown, Pa.

Filed Dec. 22, 1977, Ser. No. 863,138
Int. Cl.[2] F23J *15/00*; F23D *11/00*
U.S. Cl. 431—202 **14 Claims**



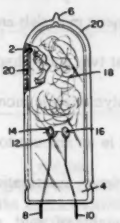
1. Apparatus for combustion of waste gas comprising
a source of combustible waste gas,
a fixed base,
an upright flare stack pipe secured at its lower end to said base for combustion of said waste gas at its discharge end,
a protective conduit extending horizontally from the lower end of said stack pipe,
a generally horizontally disposed supply conduit connected to said source and rigidly secured to the lower end of said stack pipe for delivery of waste gas thereto from said source for combustion,
said supply conduit being disposed within said protective conduit,
a convexly shaped mound of heat reflective material of lower heat conductivity in surrounding and heat protective relation to the lower end of the stack pipe above the top of which said stack pipe extends,
said mound extending along a predetermined length of said protective conduit in heat protective relation thereto and to said supply conduit,
said supply conduit being supported within said protective conduit for expansion and contraction therein.

4,198,199

LAMP WITH PROTECTIVE COATING AND METHOD OF APPLYING SAME

Judith A. Dow, Boston; Thomas J. Sentementes, Wakefield; Horace H. Homer, Arlington, all of Mass., and John W. Shaffer, Williamsport, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 22, 1976, Ser. No. 753,255
Int. Cl.[2] F21K *5/02*
U.S. Cl. 431—360 **4 Claims**



1. A lamp having a light-transmitting envelope and an optically clear protective coating formed in situ on the exterior surface of said envelope for significantly enhancing the containment thereof, said coating comprising a single layer of a solvent-free photopolymer having a thickness of at least about 0.020 inch, said photopolymer comprising a UV curable synthetic polymer containing an organic photoinitiator or photosensitizer.

4,198,200

DAMAGE-PREVENTIVE COATINGS

James B. Fonda; Howard B. Swanson, Jr., both of Erie, and Dennis D. Howard, Girard, all of Pa., assignors to Lord Corporation, Erie, Pa.

Filed May 18, 1978, Ser. No. 907,084
Int. Cl.[2] C08L *75/00*
U.S. Cl. 431—360 **8 Claims**

1. A structure comprising a hermetically sealed glass envelope, a combustion-supporting gas in said envelope, ignition means attached to said envelope and disposed in operative relationship to said combustible material, and a protective coating on the exterior surface of said envelope, characterized in that said protective coating comprises an addition-polymerized unsaturated resin composition, further characterized in that said addition-polymerized unsaturated resin composition, prior to curing, comprises an addition-polymerizable admixture comprising:
(a) at least one addition-polymerizable resin selected from the group consisting of unsaturated urethane resin and unsaturated urea resin, such addition-polymerizable resin comprising the reaction product of
(i) at least one organic isocyanate compound characterized by the presence of at least two reactive isocyanate groups;
(ii) from 30 to 100 mol percent of at least one polymeric material characterized by the presence of at least two active hydrogen groups selected from hydroxyl, primary amine, secondary amine, and mixtures of such groups;
(iii) from 70 to 0 mol percent of at least one monomeric chain-extending compound having at least two active hydrogen groups selected from hydroxyl, primary amine, secondary amine, and mixtures of such groups; and
(iv) at least one addition-polymerizable monomeric compound having a single ethylenically unsaturated unit and a single isocyanate-reactive hydrogen group selected from hydroxyl, primary amine, and secondary amine;

said isocyanate compound (i) being present in an amount sufficient to provide an NCO:active hydrogen group ratio of at least 1.05:1 with respect to the active hydrogen groups of (ii) and (iii);

the mole percents of (ii) and (iii) being based on total mols of polymeric materials and monomeric materials having at least two active hydrogen groups;

said addition-polymerizable monomeric compound (iv) being present in an amount to provide from 0.5 to 3 units of ethylenic unsaturation per 1,000 units of molecular weight of said addition-polymerizable resin; and

(b) a reactive diluent system comprising at least one addition-polymerizable unsaturated monomeric compound which is copolymerizable with said addition-polymerizable resin, said reactive diluent system comprising from 10 to 100 percent by weight, based on total weight of diluent system of N-vinyl-2-pyrrolidone.

4,198,201

METHOD OF AND APPARATUS FOR OPERATING INDUSTRIAL FURNACE SYSTEMS

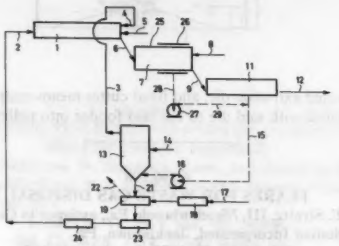
Hans-Jörg Rohrbach, Balingen, Fed. Rep. of Germany, assignor to Rohrbach Technologie, Kommanditgesellschaft Baustofftechnik GmbH & Co., Fed. Rep. of Germany

Filed Jun. 2, 1978, Ser. No. 911,952

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726157

Int. Cl.[2] F27B *15/00*

U.S. Cl. 432—13 **16 Claims**



9. A method for operating an industrial furnace system including heat treating chamber means for supplying heat to a material to be treated, a fuel supply for supplying fuel to said chamber means, and means for collecting waste heat from said furnace system, comprising the steps of

(a) supplying waste heat from said furnace system to a sewage slurry mixture of water and waste fuels for combustion of said sewage slurry; and

(b) supplying said waste fuels to said fuel supply, whereby waste heat from said furnace system is recycled through combustion of said sewage slurry to produce waste fuels used by said system heat treating chamber means.

4,198,202

METHOD OF PRODUCING EDGE-PRINTED FABRIC GARMENT PIECES

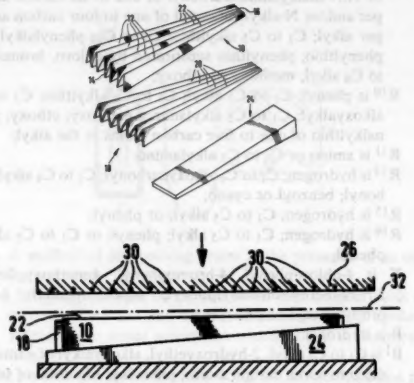
Kürt Kleber, Sofienstrasse 13, 6842 Bürstadt, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,542

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1978, 2807133; Mar. 31, 1978, 2813901

Int. Cl.[2] D06P *5/12, 7/00;* A41D *1/14*

U.S. Cl. 8—2.5 R 14 Claims



1. Method of producing a fabric garment piece, comprising: placing a fabric garment piece already provided with flare pleats in a pleating form, holding said garment piece folded together with the form, laying thermal printing paper on the front edges of pleat creases visible in the form so that its color-yielding face lies on the edges of the pleat creases, placing the pleating form, including the flare-pleated garment piece placed therein and the thermal printing paper layed thereon, between the plates of a thermal printing press so that the front edges of the pleat creases extend parallel to the plates, thereafter placing the heated plates, with a pressure sufficient to effect transfer of color, onto the back face of the thermal printing paper placed on the edges, and maintaining the pressure for a time period required for transfer of color from the paper to the edges.

4,198,203

DYESTUFF SOLUTIONS OF COPPER PHTHALOCYANINE DERIVATIVES FOR PAPER DYEING

Manfred Groll, Cologne, and Friedhelm Müller, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 28, 1978, Ser. No. 901,093

Claims priority, application Fed. Rep. of Germany, May 3, 1977, 2719719

Int. Cl.[2] D21H *1/46;* C09B *47/04;* D21D *3/00;* D21H *3/80*

U.S. Cl. 8—7 4 Claims

1. An aqueous solution of copper phthalocyaninesulphonic acids of the formula

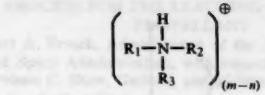
$$CuPc\text{-}(3)(SO_3^{\ominus}M^{\oplus})_m$$

in which

CuPc denotes copper phthalocyanine,

m denotes a number from 1.8 to 2.5 and

$M^{\oplus}$ denotes a mixture of $A_n^{\oplus}$ and an amine of the formula



in which

n represents a number 0.8 to 1.5,

$A_n^{\oplus}$ represents an alkali metal ion or NH_4 ion,

R_1 and R_2 represent hydrogen, C_1–C_4-alkyl or $(CH_2—CH_2—O)_p—H$ and

R_3 represents $—(CH_2—CH_2—O)_p—H$, wherein

p denotes an integer from 1 to 6.

4,198,204

SHORT LIQUOR DYEING PROCESS FOR PIECE GOODS, MADE FROM CELLULOSE FIBERS, IN ROPE FORM

Hans-Ulrich von der Eltz, Frankfurt am Main; Joachim W. Lehmann, Kelkheim; Erwin Ungermann, Steinbach; Edwin Hümüller, Hofheim am Taunus; Karl-Heinz Keil, and Joachim Ribka, both of Offenbach am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Nov. 22, 1977, Ser. No. 853,997

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1976, 2653919; Sep. 14, 1977, 2741266; Sep. 14, 1977, 2741267; Oct. 25, 1977, 2747699

Int. Cl.[2] D06P *3/82, 3/60*

U.S. Cl. 8—21 R 25 Claims

1. In a process for dyeing mesh fabrics and woven fabrics, made from cellulose fibers and mixed yarns thereof, in rope form on a winch beck or jet dyeing apparatus by the exhaustion method at a short liquor ratio in the presence of at least one auxiliary, using an aqueous liquor containing dyes or dye precursors which are suitable for the type of fiber and optionally fixing chemicals, the improvement comprising dyeing said fabrics in rope form on a winch beck or jet dyeing apparatus at a liquor ratio of 1:3 to 1:8, on the weight of the dry goods and in the presence of 2–8 g/l of an anionic or non-ionic, aliphatic softener or mixture thereof, as an auxiliary for said dyeing at said short liquor ratio.

4,198,205

TRIAZINYL-ANTHRAQUINONE DYE FORMULATIONS FOR CELLULOSE OR CELLULOSIC FIBROUS MATERIAL

Wolfgang Elser, Wachenheim; Heinz Eilingsfeld, Frankenthal, and Guenter Meyer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

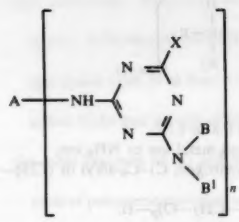
Division of Ser. No. 758,668, Jan. 12, 1977, abandoned. This application May 15, 1978, Ser. No. 906,684

Claims priority, application Austria, Jan. 21, 1976, 381/76

Int. Cl.[2] C09B *1/00;* C07D *251/48*

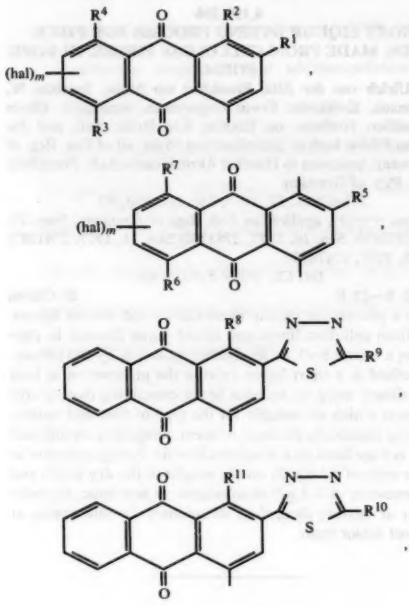
U.S. Cl. 8—39 R 7 Claims

1. Dyed, water-swellable cellulosic fibers having a dyeing which is fast to washing, dry-cleaning and light, said fibers having been dyed by applying thereto simultaneously or successively water; one of ethylene glycol, propylene glycol, diethylene glycol, and dipropylene glycol serving as a water retention agent; polyethylene oxide or a reaction product of polyethylene oxide with boric acid in a molar ratio of 3:1; and an essentially water insoluble dye of the formula

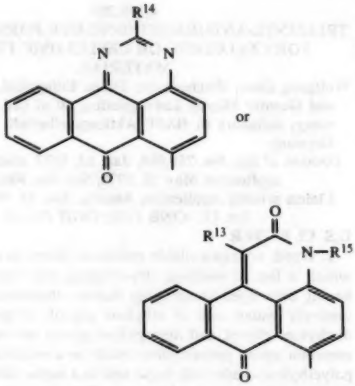


in which

A is unsubstituted or substituted anthraquinonyl, anthrapyridone or anthrapyrimidine group of the formulae



or



in which hal is chloro or bromo;

m is zero, 1 or 2;

R^1 is hydrogen, chloro, bromo, methyl, ethyl, C_1 to C_6 alkoxy, phenoxy, alkylphenoxy of one to six carbon atoms in the alkyl, chlorophenoxy, bromophenoxy, C_1 to C_6 alkylthio, phenylthio, alkylphenylthio of one to six carbon atoms in the alkyl, acetyl, propionyl, benzoyl, monomethylbenzoyl, dimethylbenzoyl, trimethylbenzoyl, phenoxybenzoyl, C_1 to C_6 alkoxycarbonyl, N-alkylaminocarbonyl or N,N-dialkylaminocarbonyl of one to six carbon atoms per and/or N-alkylsulfamoyl of one to four carbon atoms per alkyl; C_1 to C_5 alkylthio; C_7 to C_{10} phenylalkylthio; phenylthio; phenylthio substituted by chloro, bromo, C_1 to C_4 alkyl, methoxy or ethoxy;

R^{10} is phenyl; C_1 to C_5 alkyl; C_1 to C_8 alkylthio; C_3 to C_8 alkoxyalkyl; C_1 to C_5 alkylamino; methoxy; ethoxy; phenalkylthio of one to five carbon atoms in the alkyl;

R^{11} is amino or C_1 to C_5 alkylamino;

R^{13} is hydrogen; C_1 to C_6 alkoxycarbonyl; C_1 to C_4 alkylcarbonyl; benzoyl or cyano;

R^{15} is hydrogen; C_1 to C_5 alkyl; or phenyl;

R^{14} is hydrogen; C_1 to C_5 alkyl; phenyl; or C_1 to C_5 alkylphenyl;

X is 4-chlorophenyl, 4-bromophenyl, 4-methoxyphenyl, 3,N,N-diethylsulfamoylphenyl, 4-methylphenyl, 4-isopropylphenyl or phenyl;

B is hydrogen;

B^1 is C_1 to C_8 alkyl, 2-hydroxyethyl, alkoxyalkyl of a total of three to seven carbon atoms, phenalkyl of a total of seven to ten carbon atoms, phenoxyalkyl of two to four carbon atoms in the alkyl, phenoxyalkoxyalkyl of four to six carbon atoms in the alkoxyalkyl, cyclohexyl, phenyl or phenyl in which one hydrogen atom is replaced by fluoro, trifluoromethyl, phenalkoxy of seven to eight carbon atoms, carbonylalkoxy of a total of two to five carbon atoms, alkylaminocarbonyl or dialkylsulfamoyl of one to four carbon atoms per alkyl or phenoxy and one to three hydrogen atoms are optionally replaced by methyl, methoxy, ethoxy, chloro or bromo and the substituents may be identical or different; and

n is one of the integers 1 and 2.

4,198,206

METHOD FOR PREPARING A PLATELET REFERENCE CONTROL

Wayne L. Ryan, 3631 S. 116th Ave., Omaha, Nebr. 68144

Continuation-in-part of Ser. No. 805,810, Jun. 13, 1977, Pat. No. 4,160,644. This application Aug. 30, 1978, Ser. No. 937,955

Int. Cl.[2] **G01N** *33/16*

U.S. Cl. 23—230 B **4 Claims**

1. A method for preparing a platelet reference control comprising:

reacting platelets with an aldehyde and removing the aldehyde by centrifugation

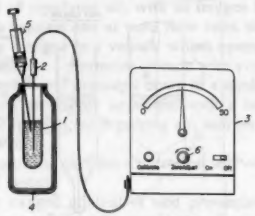
suspending the aldehyde-reacted platelets that have been washed in an amino acid solution in a solution of: (a) a first member selected from the class consisting of glycine and alanine having a molarity in the range of about 0.10 to about 0.30, (b) a second member selected from the class consisting of ethylene glycol, glycerine and methanol having a molarity in the range of about 0.5 to about 1.5, (c) a third member selected from the class of sodium chloride and sodium phosphate having a molarity of from about 0.1 to about 1.0 and a pH in the range of at least about 6.5–7.4, and (d) a solid polyethylene glycol.

4,198,207

DETERMINATION OF WATER CONTENT IN PRESENCE OF OILS

Edwin N. Ladov, Cherry Hill; Derek A. Law, Pitman, and Guenter H. Kuehl, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 24,233
Int. Cl.[2] G01N *25/56, 33/18, 33/28*
U.S. Cl. 23—230 HC 7 Claims



1. A method of determining water in the presence of an oil which comprises

(a) bringing a sample of oil and water into contact with a mixture of solvent and crystalline aluminosilicate zeolite whereby the water adsorption causes a rise in temperature,

(b) providing a means for measuring the temperature rise in terms of percentage by weight of water and

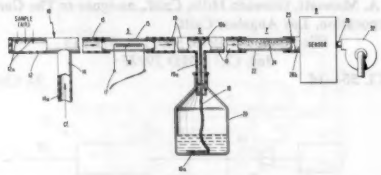
(c) determining the percentage of water in the sample.

4,198,208

METHOD AND APPARATUS FOR VAPOR DETECTION

Melvin Lerner, Bethesda, Md.; Lyal V. Hood, Annandale, Va.; Marjorie A. Rommel, Westmont, Ill.; Bruce C. Pettitt, Sterling, Va., and Charles M. Erikson, Silver Spring, Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 779,964, Mar. 22, 1977, abandoned. This application Feb. 6, 1979, Ser. No. 9,885
Int. Cl.[2] G01N *27/00, 33/00*
U.S. Cl. 23—232 R 15 Claims



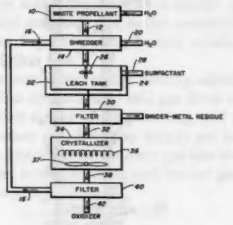
1. A method for detecting vapors of an organic compound at elevated temperature to form a halogenated organic compound susceptible of halogenation comprising the steps of mixing a sample vapor comprising vapor of an organic compound susceptible of halogenation and vapor of a halogen selected from the group consisting of chlorine and bromine, maintaining the mixed vapors in a reaction zone at a temperature of from 825° to 925° C. for a time sufficient to effect halogenation of said organic compound to form a halogenated organic compound, removing unreacted halogen vapor from said mixed vapors, and thereafter sensing the halogenated organic compound to detect the presence of said organic compound in the sample vapor.

4,198,209

PROCESS FOR THE LEACHING OF AP FROM PROPELLANT

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Graham C. Shaw, Garland, and Meldon J. McIntosh, North Ogden, both of Utah

Filed Sep. 29, 1978, Ser. No. 946,990
Int. Cl.[2] C01D *1/30;* B01J *17/00;* C06B *25/02*
U.S. Cl. 23—302 R 11 Claims



1. A method of recovering a water soluble oxidizer from particles of solid propellant containing the oxidizer dispersed in an organic, elastomeric hydrocarbon binder comprising the steps of:

forming a slurry of the particles in an aqueous leach solution containing at least 0.01% by weight of a synthetic organic surfactant having an oleophilic portion that associates with the surface of the propellant particles and a hydrophilic portion to aid dispersion in the aqueous leach solution whereby said surfactant is capable of preventing agglomeration of the particles;

heating the leach solution to a temperature from 130° F. to 200° F. and stirring the solution while dissolving the oxidizer into the leach solution;

separating the leach solution from the particles; and

crystallizing the oxidizer and recovering it from the separated leach solution.

4,198,210

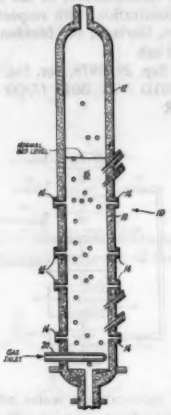
GAS DISTRIBUTOR FOR FLUIDIZED BED COAL GASIFIER

Arthur C. Worley, Mt. Tabor, N.J., and James A. Zboray, Irvine, Calif., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 23, 1979, Ser. No. 14,698
Int. Cl.[2] C10J *3/56*
U.S. Cl. 48—77 3 Claims

1. In a gasifier for use in high temperature processes, comprising an outer shell having a fluid bed of coal particles extending from the bottom thereof upward for a predetermined distance and a gas distributor immersed in said bed at said bottom, wherein the improvement comprises: said gas distributor comprising a pipe with an outer metal casing extending into said bed and lined internally with metal fiber reinforced refractory material for defining an interior hollow portion, a plurality of gas discharge nozzles with outer metal casings on the underside of said pipe comprising orifice openings, each of said orifice openings including an entrance opening directly adjacent said interior hollow portion of said pipe having a uniform diameter for a predetermined length, which extend from the interior hollow portion of said pipe through the pipe lining and terminate in an outlet for passage of gases from said distributor into said fluid bed, each of said orifice openings including refractory material along the inner surface thereof extending

from said interior hollow portion to said outlet of said discharge nozzle and each of said nozzles including a continuously divergent hollow portion interior thereof extending from directly adjacent said entrance opening to said outlet.



4,198,211

MICROBIOLOGICAL PROCESSES TO PRODUCE FUEL GAS

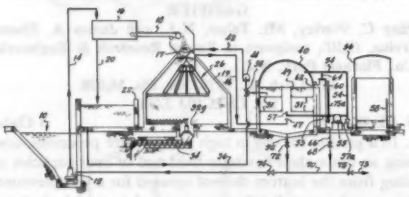
Geoffrey F. Shattock, 5 Orchard Close, Long La., Tielhurs, Reading Berkshire, England

Filed Jan. 3, 1978, Ser. No. 866,507

Claims priority, application United Kingdom, Jan. 7, 1977, 641/77

Int. Cl.[2] C10J *1/06*; C02C *1/14*

U.S. Cl. 48—197 A **14 Claims**



1. A process of treating an organic effluent slurry susceptible to aerobic composting and anaerobic microbiological degradation with the production of a fuel gas, comprising the steps of (a) separating the slurry into a first, solids concentrated, fraction of relatively coarse particle size, and a second, solids dilute, fraction of relatively fine particle size; (b) carrying out on the first fraction an aerobic composting reaction which is exothermic; (c) carrying out on the second fraction an anaerobic microbiological reaction in which a fuel gas comprising methane is produced in the presence of microorganisms comprising methanogenic bacteria; and (d) utilising heat from the exothermic reaction to promote the fuel gas producing reaction.

4,198,212

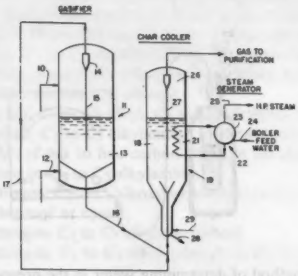
COAL GASIFICATION EFFLUENT TREATMENT

Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Continuation of Ser. No. 800,069, May 24, 1977, abandoned. This application Aug. 17, 1978, Ser. No. 934,391

Int. Cl.[2] C10J *3/54*

U.S. Cl. 48—210 **8 Claims**



1. In a process for the gasification of coal in a coal gasification zone to produce a solid char residue and a coal gasification effluent containing tar and oils, the improvements comprising:

separately withdrawing said char and said coal gasification effluent from said coal gasification zone;

suspending said withdrawn char in said withdrawn coal gasification effluent;

passing said char suspended in said gasification effluent into a fluidized char bed maintained in a char cooling zone;

cooling and maintaining char in said bed at a temperature of from 220° F. to 600° F. by indirect heat transfer, whereby said coal gasification effluent, containing tar and oils, passing through said cooled char bed is cooled and tar and oils are separated therefrom by absorbing the tar and oils on said char bed; and

removing cooled char from the coal gasification process without recycle of any cooled char to the coal gasification zone by withdrawing cooled char from said char bed, whereby char produced in the coal gasification is cooled prior to removal thereof.

4,198,213

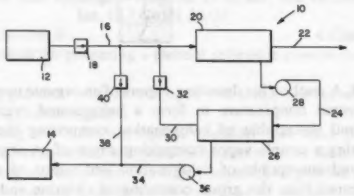
SELF ADJUSTING OXYGEN ENRICHMENT SYSTEM

Scott A. Mannatt, Granada Hills, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jan. 26, 1978, Ser. No. 872,513

Int. Cl.[2] B01D *59/12*

U.S. Cl. 55—16 **14 Claims**



1. In a vehicle for operating over a range of altitudes including a maximum altitude, an improved breathing apparatus comprising:

a source of pressurized air on said vehicle;

enriching means for receiving said pressurized air and increasing its oxygen concentration to a preselected per-

centage at a generally fixed mass flow rate sufficient for breathing at said maximum altitude;

breathing means for receiving air from said enrichment means for use at a demand mass flow rate which varies with changes in altitude of said vehicle; and

supply means for providing additional air to said breathing means at reduced altitudes less than said maximum altitude to the extent said demand mass flow rate exceeds said fixed mass flow rate and with a reduced oxygen concentration sufficient for breathing at said reduced altitude.

14. A method of supplying air, with an oxygen level sufficient to prevent hypoxia and at mass flow rates sufficient to satisfy breathing demand in a vehicle which operates over a range of altitudes up to a maximum altitude with a corresponding range of atmospheric pressures down to a minimum pressure, to breathing air supply apparatus with a substantially constant volume demand for breathing air, said method comprising the steps of:

supplying pressurized air from a source on said vehicle to an enrichment system;

enriching the oxygen content of said pressurized air to a level sufficient to prevent hypoxia at said maximum altitude and minimum pressure;

supplying said enriched air to said breathing apparatus at a rate sufficient to satisfy breathing demand at said minimum pressure; and

adding pressurized air to said breathing apparatus as required to satisfy said fixed volume breathing demand while maintaining the oxygen content at a level sufficient to prevent hypoxia when combined with said enriched air at reduced altitudes and atmospheric pressures greater than said minimum pressure.

4,198,214

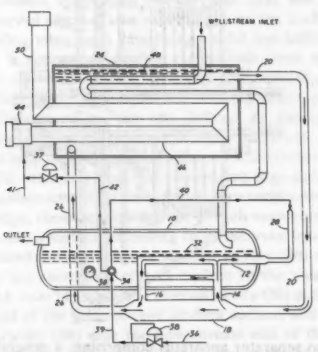
METHOD AND APPARATUS FOR HEATING A SEPARATOR

Rodney T. Heath, 4901 E. Main St., Farmington, N. Mex. 87401

Filed Jan. 16, 1979, Ser. No. 3,922

Int. Cl.[2] **B01D** *19/00*

U.S. Cl. 55—20 **8 Claims**



1. A method of controlling the heating of a separator for a hydrocarbon well production, in which a separator tank is arranged to contain liquid well effluent, comprising:

(a) providing a supply of heating solution having a gas burning heater, and having an elevated heated solution outlet and a lower return inlet for cooled solution;

(b) forming a heat exchange coil through the separator tank for passing heated solution from the upper outlet or supply of heating solution to the lower return inlet in a thermosyphon flow;

(c) supplying low pressure gas controlled by a three-way valve to the coil in the separator tank with heating solution when the temperature of the effluent is above a predetermined temperature; and,

(d) supplying gas from the coil to the gas burning heater when the temperature of the effluent is less than desired temperture.

4. A heating system for a well effluent separator having a heating solution coil; the combination of:

(a) separate heating solution supply means having a gas fired burner heat exchanger, and having an upper heated solution outlet and a lower cooled solution return inlet;

(b) manifold means connecting said solution outlet and said solution inlet on said heating solution supply means;

(c) heating solution coil inlet and outlet connections to said manifold means for circulating heated solution through the heating solution coil;

(e) a coil gas line connected to the heating solution coil;

(f) a burner gas line connected to said gas fired burner; and,

(g) three way valve means interconnecting said supply gas, coil gas and burner gas, whereby supply gas is connected to said coil gas line when said burner gas line is closed, and said coil gas line is connected to said burner gas line when said supply gas line is closed.

4,198,215

FIN DEFLECTOR FOR SEPARATING LIQUID FROM A LIQUID/VAPOR MIXTURE

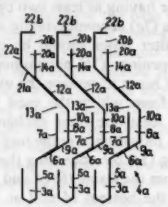
Ulrich Regehr, Susterfeldstrasse 63, D-5100 Aachen, Fed. Rep. of Germany

Filed Jun. 2, 1978, Ser. No. 911,872

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1977, 7717599[U]

Int. Cl.[2] **B01D** *45/08*

U.S. Cl. 55—185 **4 Claims**



1. A device for separating a mixture of liquid and gas comprising:

a plurality of generally sinusoidally shaped elements spaced one from the other forming surfaces on which said mixture is impinged, said surfaces extending transversely to the direction of flow of said mixture through said device; and

a plurality of collecting channels within said surfaces, said collecting channels being disposed to collect liquid therein and transport the collected liquid transversely to the direction of flow of said mixture through said device, said collecting channels being in flow communication with the space between said surfaces by means of openings on said surfaces, each of said openings being oriented on said surfaces to open in a downstream direction.

4,198,216

ARRANGEMENT FOR THE EXCHANGE OF FILTER ELEMENTS

Gunnar R. Wilhelmsson, Växjö, Sweden, assignor to AB Svenska Fläktfabriken, Nacka, Sweden

Filed Jun. 15, 1978, Ser. No. 915,992

Claims priority, application Sweden, Jun. 29, 1977, 7707542

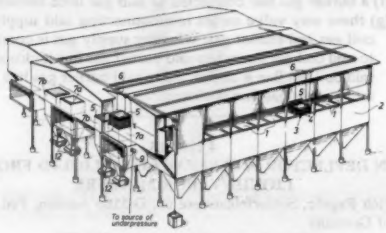
Int. Cl.[2] **B01D** *41/00*

U.S. Cl. 55—341 R **5 Claims**

1. In a filter plant for filtering contaminated gas comprising

a plurality of filter units, each filter unit comprising a filter chamber (2) into which at least one filter box (3) is removably insertable, said at least one filter box (3) including an upper frame (5) and a plurality of filter hoses (4) removably mounted in said upper frame (5) and which are open at one end and closed at the other, said filter chamber (2) and filter hoses (4) being arranged such that contaminated gas enters through the outer sides of the hoses and purified gas leaves through their open ends while impurities in said contaminated gas are separated and deposited on the outsides of said filter hoses, said filter hoses being detachably fixed at their open ends to said upper frame (5) and being suspended substantially vertically from said upper frame (5) when said filter box (3) is inserted into a filter chamber (2),

the improvement wherein:



said filter plant comprises at least one filter exchange chamber (7) spaced from said filter units and forming an integrated part of the filter plant, said at least one filter exchange chamber having at least two openings (7*a*,7*b*) one of said openings (7*a*) accommodating a used filter box (3) in which the filter hoses should be exchanged and the other of said openings (7*b*) accommodating a filter box with clean filter hoses to replace the used filter box in the filter chamber from which the used filter box was removed, said at least one filter exchange chamber at its bottom portion including a collecting means (12) below said one opening (7*a*) for collecting the filter hoses which are detached from the frame (5) of said used filter box and which drop to the bottom of said at least one filter exchange chamber during detachment of said filter hoses from said upper frame (5) of said used filter box.

4,198,217

PROTECTIVE AIR FILTER INTAKE HOOD WITH AIR DEFLECTING INTAKE SCREEN

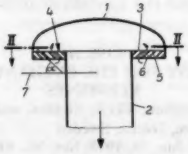
Hans Erdmannsdörfer, Ludwigsburg, Fed. Rep. of Germany, assignor to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Aug. 28, 1978, Ser. No. 937,190

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 7728139

Int. Cl.[2] **B01D** *45/06*

U.S. Cl. 55—385 F **6 Claims**



1. A protective hood assembly for air intake systems, especially air intake filters of such air-aspirating machinery as internal combustion engines, air compressors, and the like, comprising in combination:

a substantially vertically oriented intake duct which is open on both ends, for a downward flow of air through the duct;

an upwardly domed hood arranged above the upper end of the intake duct, the hood having a peripheral edge defining the outermost and lowermost extent of the hood, said edge being located at approximately the same level as the upper end of the intake duct and circumscribing an area which is considerably larger than the cross-sectional area of the intake duct at its upper end, thereby forming a downwardly oriented air intake opening adjacent to the upper end of the air intake duct; and

a substantially horizontally oriented screen covering the air intake opening between the intake duct and the hood, while supporting the hood, the screen having its inner and outer peripheries attached to the intake duct and to the hood, respectively; and wherein

the screen has a series of parallel oriented lamellae-like slats forming air flow gaps therebetween; and

the slats of the screen are inclined from the vertical direction, so that the direction of air flow in said gaps is upward and outward, away from the intake duct, thereby forcing the incoming air to execute a change in flow direction of more than 180 degrees between the screen and the upper opening of the intake duct.

4,198,218

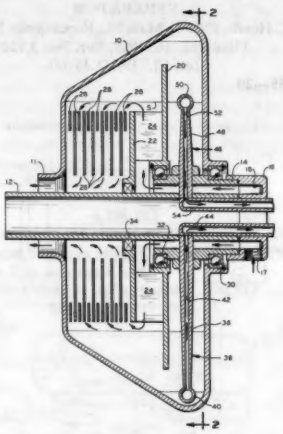
GAS SEPARATION APPARATUS

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Filed Mar. 23, 1979, Ser. No. 23,208

Int. Cl.[2] **B01D** *45/12*

U.S. Cl. 55—408 **6 Claims**



1. A gas separator apparatus comprising: a generally cylindrical housing rotatable about a central axis and defining a main separating chamber; a dirty gas inlet communicating with the interior of said housing; means within said housing for increasing the radial velocity of the dirty gas introduced into said housing through said gas inlet; stationary fluid intake passage means extending radially outwardly of the central axis of said housing into the main separating chamber, said passage means including a fluid intake opening at the outermost end thereof, and a fluid outlet in communication with the opposite end thereof; stationary particulate intake passage means extending radially outwardly of the central axis of the housing into the main separating chamber, said passage means including a particulate intake opening at the outermost end thereof,

and a particulate outlet in communication with the opposite end thereof; a clean gas outlet; and an impingement plate separator disposed between the interior of said housing and said clean gas outlet for mechanically removing particles from the gas being treated.

4,198,219

AIR INLET GRILLE FOR ENGINE COMPARTMENT

William J. Krisko, Eden Prairie, Minn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 22, 1978, Ser. No. 962,827

Int. Cl.[2] B01D *45/08*

U.S. Cl. 55—440 **5 Claims**

1. In a military vehicle having an engine compartment: the improvement comprising an air inlet grille positioned on the vehicle to remove dust particles from air flowing into the engine compartment; said grille comprising a series of sinuous vanes arranged in spaced parallel relation to define S-shaped air passages; each vane having a chisel-shaped leading edge (18), a rounded convergent trailing edge (22), and two reversely curved side surfaces extending from the leading edge to the trailing edge; each vane being a solid non-hollow structure that is approximately five eighth inch thick measured across the vane side surfaces, whereby grille integrity is maintained when enemy projectiles are directed thereagainst; the vanes being spaced so that the defined air passages have slightly less transverse thicknesses than the vanes; one side surface of each vane comprising a first curved concave air-turn surface (16) extending from the vane leading edge and a curved convex surface extending from the air-turn surface to the vane trailing edge; the other side surface of each vane comprising a curved convex surface extending from the vane leading edge and a second curved concave air-turn surface (20) extending from the last-mentioned convex surface to the vane trailing edge; each vane having a first internal cavity (34) at the downstream end of the first concave air-turn surface, and a second internal cavity (54) near the downstream end of the second concave air-turn surface; a slot communicating each cavity with the immediately adjacent concave air-turn surface; a skimmer wall projecting from the vane at the downstream edge of each slot to deflect concentrated dust through the slot into the associated cavity; the upstream face of each skimmer wall being at an acute angle to the associated air-turn surface to guide dust particles into the slot; each skimmer wall projecting from the vane surface into the adjacent passage through a distance (29) that is in the range of 40% to 50% of the passage width; each slot having a width that is in the range from one tenth inch to two tenth inch; and scavenger fan means connected to each cavity for applying a suction force on each of the associated slots.

4,198,220

SCREENING MEMBER FOR SEPARATING SOLIDS FROM GASEOUS MEDIA

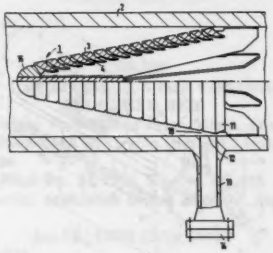
Herbert Keller, Mülheim, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,253

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1977, 2714496

Int. Cl.[2] B01D *45/06*

U.S. Cl. 55—442 **7 Claims**



1. A cone-shaped screening member having an apex and a base and an inclination angle disposed in an elongated conduit having a gas inlet and a gas outlet, for separating solids from a gaseous medium flowing through the elongated conduit from said gas inlet to said gas outlet, said cone-shaped member positioned in the conduit such that the apex of the cone member is a shorter distance to the gas inlet of the conduit than the base of the cone and conversely the base is a shorter distance to the gas outlet than the apex, the cone-shaped member having a plurality of annular screen elements of increasing diameters disposed behind each other from the apex to the base of the cone shaped member, with the cross section of each annular screen element being shaped substantially as an obtuse triangle with an outer triangle side having a leading edge and a trailing end, one of the other sides of each of two mutually adjacent annular screen elements defining therebetween a flow channel which is first inclined at an angle to the direction of the oncoming flow of gaseous medium and then changes to an outflow direction parallel to the direction of the oncoming flow, said outer triangle side of each of said screen elements being inclined from the flow direction of the gaseous medium at about the inclination angle of said cone shaped member, the combination therewith of a discharge opening in said elongated conduit positioned at about the base of the cone-shaped member for removal of solids separated from the gaseous medium.

4,198,221

PARTICLE-IN-GAS FILTERING

Jack R. Catlin, Gosforth; Robert E. Strong, Bootle, and William R. Guest, Holmrook, all of England, assignors to British Nuclear Fuels Limited, Warrington, England

Filed Mar. 20, 1978, Ser. No. 888,289

Claims priority, application United Kingdom, Apr. 21, 1977, 16646/77

Int. Cl.[2] B01D *46/00*

U.S. Cl. 55—481 **6 Claims**

1. A filter assembly for particle-in-gas filtration comprising:

a filtering enclosure,

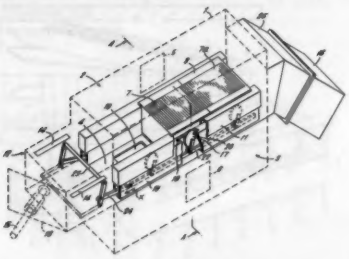
a horizontal partition dividing the enclosures into an inlet chamber and an outlet chamber and having apertures communicating between the inlet chamber and the outlet chamber,

an inlet leading into the inlet chamber,

an outlet leading from the outlet chamber, filter units each having a frame and outwardly extending flanges along two opposite sides thereof, said filter units being adapted

to be located on the partition in a filtering position such that gas passing from the inlet chamber to the outlet chamber passes through the filter units before passing through said apertures, and being adapted to be moved vertically to a second position in which the filter units are displaced from the partition,

means for moving the filter units vertically from the filtering position to the second position comprising opposed supporting members located within the enclosure above the partition, said supporting members being movable between a lower position in which the supporting member rests below the flanges of the filter units when the filter units are in the filtering position and an upper position in



which the filter units are lifted from the partition and are suspended from the supporting members by the flanges, the filter units being in their second position when the supporting members are in the upper position,

means located in said inlet chamber for moving said filter units upwardly to said second position and downwardly to said filtering position,

a horizontal second inlet communicating with said inlet chamber and a horizontal second outlet communicating with said outlet chamber

means for moving the filter units horizontally along the supporting members when the filter units are in the second position from said horizontal second inlet toward said horizontal second outlet.

4,198,222

CONDENSATION PREVENTING ARRANGEMENT FOR INTERIOR OF A HOUSEHOLD REFRIGERATOR

Ronald P. Wood, Floyd Knobs, Ind., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 1, 1977, Ser. No. 856,373
Int. Cl.[2] F25D *21/00, 21/14, 11/02;* **F25B** *39/02*
U.S. Cl. 62—272 **6 Claims**

1. A refrigerator comprising:

a fresh food compartment;

a freezer compartment;

a partition between said compartments;

said partition having a partition surface facing said fresh food compartment, said partition surface being cooled by thermal leakage to a temperature lower than the air temperature within said fresh food compartment, said partition surface having substantially its entire area non-porous so that moisture condensation cannot flow or soak therethrough; and

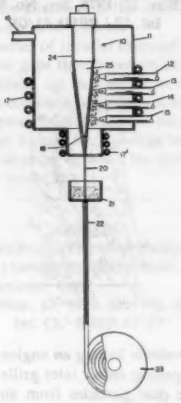
alumina coating said partition surface to permit any moisture condensation forming thereon to spread out in a thin sheet.

4,198,223

CONTINUOUS FIBER FABRICATION PROCESS

James E. Goell, and Mokhtar S. Maklad, both of Roanoke, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 17, 1977, Ser. No. 797,722
Int. Cl.[2] C03B *37/02;* **C03C** *13/00, 25/02*
U.S. Cl. 65—3 A **14 Claims**



1. A method for forming a multi-component glass optical fiber, comprising the steps of:

providing a high temperature refractory mandrel having an outer surface tapered to a tip at one end;

positioning said mandrel substantially vertically with the tapered end disposed downwardly;

continuously rotating said mandrel while maintaining it stationary in the vertical direction;

continuously and simultaneously subjecting said outer surface of the mandrel to a plurality of glass forming components in chemical vapor form utilizing a plurality of deposition nozzles;

continuously forming multi-component glass on said mandrel;

continuously melting the glass on said mandrel by heating the mandrel to the melting temperature of the glass;

flowing the melted glass downwardly over the mandrel towards the tip of the tapered end; and

continuously drawing said melted glass in a downwardly and substantially vertical direction from the tip of the tapered end of said mandrel while continuously forming and melting glass on said mandrel, whereby a continuous optical fiber is formed.

4,198,224

PROCESS FOR MAKING A CELLULATED VITREOUS MATERIAL

John D. Kirkpatrick, Trafford, Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.

Filed Aug. 16, 1978, Ser. No. 934,186
Int. Cl.[2] C03B *19/08*
U.S. Cl. 65—22 **15 Claims**

1. A method of making a cellulated material comprising,

admixing a pulverulent vitreous material and a cellulating agent to form a pulverulent batch,

heating said pulverulent batch to a sintering temperature and maintaining said pulverulent batch at said sintering temperature for a sufficient period of time to permit said pulverulent vitreous material to soften and coalesce to form a sintered batch,

terminating the heating of said sintered batch before the cellulating agent reacts with the vitreous material so that cellulation of the sintered batch does not occur,

permitting said sintered batch to cool below said sintering temperature, and

thereafter heating said sintered batch to a cellulating temperature and maintaining said sintered batch at said cellulating temperature for a sufficient period of time for the cellulating agent to react and cellulate the sintered batch to form a cellulated material.

4,198,225

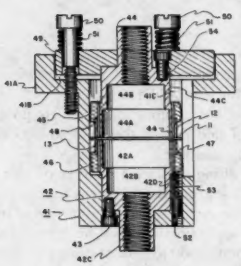
MICROCHANNEL PLATE IN WALL FABRICATION, METHOD AND APPARATUS

E. Vincent Patrick, Lorton; Lewis C. Spessard, Burke, and Kurt Villhauer, Annandale, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 20, 1979, Ser. No. 31,813

Int. Cl.[2] C03C *27/08*

U.S. Cl. 65—43 **10 Claims**



1. The method of fabricating a microchannel plate-in-wall structure, consisting of an MCP and two hollow generally cylindrical glass wall sections with normal plane edges surrounded by an oxidizing atmosphere, said method comprising the steps of:

coating one edge of each of said wall sections with a layer of glass frit;

pressing each of said edge portions against an opposite side of said MCP whereby a portion of each electrode on said MCP, spaced radially outward from the channels thereon, is bridged by one of said edge portions;

isolating said channels from said oxidizing atmosphere;

heating said frit at least to its melting point; and

cooling the resulting structure to room temperature.

6. A fixture for holding an MCP between two hollow cylindrical glass wall sections while the resulting structure is heated and sealed together, comprising:

first and second tubular cup members open at their largest diameter end having a conduit coupling at their small diameter end;

the rim of said MCP being interposed between and contacting said open ends;

a body member surrounding said cup members engaging and axially aligning said first cup member and said MCP with said body member;

a pressure plate means, spring coupled between said body member and said second cup member, to align said first and second cups and to vary the pressure between said open ends and said MCP;

a first retaining ring means spring coupled between said body member and a first of said wall sections to vary the pressure between said first wall section and said MCP and to align the axes thereof, said body member being oriented such that said first wall section lies below said MCP;

a second retaining ring means resting on the top edge of said second wall section to press same against said MCP, said second retaining ring means being shaped to radially restrain the edges of said second wall section remote from said MCP and thereby align the axis of said second section with said MCP relative said body.

4,198,226

METHOD AND APPARATUS FOR CONTROLLING A FLUIDIZED BED

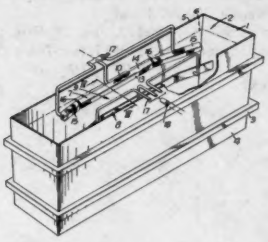
Donald C. Wright, Parbold, and Brian Marsh, Orrell, both of England, assignors to Pilkington Brothers Limited, St. Helens, England

Filed Sep. 21, 1978, Ser. No. 944,613

Claims priority, application United Kingdom, Sep. 29, 1977, 40564/77

Int. Cl.[2] C03B *25/04, 29/04*

U.S. Cl. 65—114 **22 Claims**



1. A method of operating a bed of gas-fluidised particulate material, comprising extracting gas from particles in a localised region of the bed so as to defluidise particulate material in that region and produce an unfluidised static condition of the particulate material in that region of the bed.

13. Apparatus for treating an article, comprising a container for a gas-fluidised bed of particulate material, and gas-extraction means mounted at a specific location in the container for extracting gas from particles in a localised region of the fluidised bed to defluidise particulate material in that region and thereby produce an unfluidised static condition of the particulate material in that region.

4,198,227

SYNERGISTIC HERBICIDAL COMPOSITIONS

Gerald E. Kollman, Chalfont, and Elwood N. Irwin, Media, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 5, 1975, Ser. No. 547,292

Int. Cl.[2] A01N *9/02*

U.S. Cl. 71—115 **6 Claims**

1. A synergistic herbicidal composition comprising (A) 2,3,6-trichlorophenylacetic acid, or an agronomically acceptable salt, ester, or amide thereof, and (B) 2-chloro-4-trifluoromethylphenyl-3-ethoxy-4-nitrophenyl ether wherein the weight ratio of (A) to (B) is about 1:1 to about 4:1.

4,198,228

CARBONACEOUS FINES IN AN OXYGEN-BLOWN BLAST FURNACE

Robert K. Jordan, Carlton House, Suite 1431, 550 Grant St., Pittsburgh, Pa. 15219

Continuation of Ser. No. 743,050, Nov. 18, 1976, abandoned, which is a continuation of Ser. No. 634,613, Oct. 24, 1975, abandoned. This application Sep. 5, 1978, Ser. No. 939,431

Int. Cl.[2] C21B *5/06*

U.S. Cl. 75—42 **2 Claims**

1. A process for the production of molten ferrous metals containing upwards of about 4% carbon in a blast furnace comprising

charging the furnace at the top with iron ore, coke and a fluxing material,

injecting a blast comprising substantially pure oxygen and a solid carbonaceous fuel suspended in a recycled top gas at a flame temperature of at least about 3500° F.

and recovering a molten ferrous metal containing upwards of about 4% carbon.

4,198,229

METHOD OF DEPHOSPHORIZATION OF METAL OR ALLOY

Hiroyuki Katayama, Munakata; Makoto Inatomi; Hiroyuki Kajioka, both of Kitakyushu; Yasushi Nakamura; Michihisa Ito, both of Tokyo; Kazuumi Harashima, Kawasaki, and Takamasa Ohno, Hikari, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 700,193, Jun. 28, 1976, abandoned. This application Nov. 28, 1977, Ser. No. 855,265

Int. Cl.[2] C21C *7/02*

U.S. Cl. 75—53 **16 Claims**

1. A method of dephosphorizing a molten alloy containing at least about 4% in total of elements more oxidizable than iron and having a carbon content lower than the solubility of carbon in the molten alloy comprising adding a flux composition comprising 3 to 90% by weight of calcium carbide and not less than 10% in total of at least one alkali earth metal halide under a non-oxidizing atmosphere satisfying the condition:

$$P_{O_2}+P_{CO_2}+P_{H_2O}+P_{SO_2}<60 \text{ mmHg.}$$

4,198,230

STEELMAKING PROCESS

Karl Brotzmann, and Hans-Georg Fassbinder, both of Sulzbach-Rosenberg, Fed. Rep. of Germany, assignors to Eisenwerk-Gesellschaft Maximilianshutte mbH, Sulzbach-Rosenberg, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,469

Claims priority, application Fed. Rep. of Germany, May 4, 1977, 2719981; May 4, 1977, 2719981; Jul. 2, 1977, 2729983; Dec. 17, 1977, 2756432

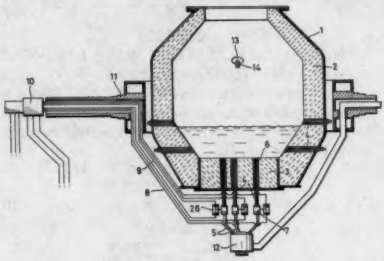
Int. Cl.[2] C21C *5/34*

U.S. Cl. 75—60 **32 Claims**

1. A steelmaking process characterized by the economical utilization of increased proportions of solid sources of iron in a convertor into which an oxidizing gas selected from the group consisting of air, oxygen and mixtures thereof is blown into the convertor through the refractory lining of the convertor by means of tuyeres located in said lining, which process comprises:

charging at least one solid source of iron selected from the group consisting of scrap, prereduced pellets of iron, sponge iron, pig iron and mixtures thereof into said convertor, so as to form a pile of said solid source of iron in said convertor;

preheating said solid source of iron by blowing said oxidizing gas through tuyeres mounted in the lower region of the convertor and supplying carriers of carbon during this preheating phase and thereby burning said carrier of carbon with said oxidizing gas thereby forming hot gaseous combustion products, the relative proportions of said carrier of carbon and of said oxidizing gas being such that



said hot products of combustion are essentially CO_2 and H_2O during said preheating;

flowing said hot combustion products upwardly from the bottom of said pile of the solid sources of iron, thereby preheating said pile;

and then melting said solid sources of iron while blowing said oxidizing gas through said tuyeres and said melt in proportions such that the composition of the exhaust gases becomes less oxidizing than the composition of the products of combustion produced during the preheating phase;

and thereafter refining the melt in the same convertor by means of oxygen blown into said melt, through said tuyeres located in said lining while said tuyeres are protected with hydrocarbon in amounts sufficient to control tuyere burnback.

4,198,231

RECOVERY AND SEPARATION OF GADOLINIUM AND GALLIUM

Erwin Gusset, Thayngen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Feb. 5, 1979, Ser. No. 9,644

Claims priority, application Switzerland, Feb. 17, 1978, 1738/78

Int. Cl.[2] C22B *58/00, 59/00*

U.S. Cl. 75—101 R **10 Claims**

1. A process for the recovery and separation of gadolinium and gallium from scrap material of substances containing both of these elements basically in the form of oxides or compounds which can be transformed to the oxides including the steps of

(a) grinding the scrap material to a particle size smaller than 100 μm,

(b) dissolving the finely ground scrap in a strong, aqueous mineral acid,

(c) precipitating out impurities,

(d) precipitating the gadolinium as the oxalate, and

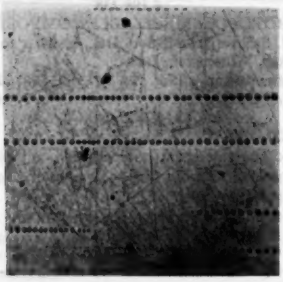
(e) depositing the gallium in the metallic form by electrolysis.

4,198,232

PREPARATION OF MONOTECTIC ALLOYS HAVING A CONTROLLED MICROSTRUCTURE BY DIRECTIONAL SOLIDIFICATION UNDER DOPANT-INDUCED INTERFACE BREAKDOWN

Richard A. Parr, Hollywood; Mary H. Johnston, and John C. McClure, both of Huntsville, all of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 29, 1978, Ser. No. 974,292
Int. Cl.[2] C22C 1/02
U.S. Cl. 75—135 11 Claims



1. The method of preparing a monotectic alloy having aligned spherical particles or rods of the minor component of a monotectic alloy system dispersed in a matrix of the major component thereof which comprises:

(a) forming a melt containing predetermined amounts of said major and minor components and a dopant characterized by its ability to provide breakdown of the liquid-solid interface for said system into a cellular pattern upon directional solidification of the melt; and

(b) directionally solidifying the melt at a predetermined temperature gradient and a predetermined growth rate.

4,198,233

METHOD FOR THE MANUFACTURE OF TOOLS, MACHINES OR PARTS THEREOF BY COMPOSITE SINTERING

Fritz Frehn, Krefeld, Fed. Rep. of Germany, assignor to Thyssen Edelstahlwerke AG, Krefeld, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,012
Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722271
Int. Cl.[2] B22F 7/06
U.S. Cl. 75—203 8 Claims

1. A method for the manufacture of tools, machines or parts thereof adapted to exhibit both resistance to wear and toughness, said method comprising:

(a) separately preparing at least two metallic powder mixtures, each mixture comprised of a base metal selected from the group consisting of iron, nickel, cobalt and mixture thereof, said mixtures having dissimilar weight contents of metal carbide;

(b) admitting said mixtures, one after the other into a mold and forming the mixtures into a pressed body;

(c) sintering said pressed body in a vacuum at the lowest temperature sufficient to cause alloy formation in the mixture having the lowest sintering temperature; and

(d) hot-pressing the partially sintered pressed body of (c) to cause alloy formation in the unsintered sections thereof and thereby achieve maximum density of said pressed body.

4,198,234

SINTERED METAL ARTICLES

Terence M. Cadle; Martyn S. Lane, and Trevor K. Johnson, all of Coventry, England, assignors to Brico Engineering, Coventry, England

Continuation of Ser. No. 305,251, Nov. 10, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 414,953
Int. Cl.[2] B22F 3/00
U.S. Cl. 75—247 7 Claims

1. A sintered metal article having a composition consisting essentially of 20–50% copper, 5–14.5% chromium, 1–4.8% iron, 1–4.8% silicon, 1–4.8% boron, 0.1–1.8% carbon, balance nickel, the microstructure of the article being a non-homogeneous 2-phase structure comprising copper-rich regions and nickel-rich regions, said copper-rich regions and nickel-rich regions being formed by partial dissolution of said copper and a nickel-rich prealloy formed from the other components, into each other.

4,198,235

DYE DIFFUSION TRANSFER PROCESS EMPLOYING COMPOUNDS THAT RELEASE SULFONAMIDE DYE PROVIDING RADICALS

Hans Vetter, Cologne; Walter Püschel, Leverkusen; Arnfried Melzer, Cologne, and Manfred Peters, Leverkusen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Fed. Rep. of Germany

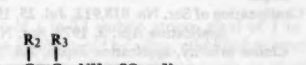
Continuation-in-part of Ser. No. 654,887, Feb. 3, 1976, abandoned. This application Jun. 21, 1978, Ser. No. 917,534
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1975, 2505248
Int. Cl.[2] G03C 1/40, 5/54, 1/10
U.S. Cl. 430—222 4 Claims

1. The process of producing colored photographic images by the dye diffusion transfer process comprising the steps of:

(a) imagewise exposing a photographic material containing at least one light-sensitive silver halide emulsion layer and associated therewith a non-diffusible color-providing compound capable of being oxidized by oxidized silver halide developer and, in oxidized form, of being split in alkaline medium to release a diffusible dye-providing radical having a free sulfonamide group,

(b) developing the material with an alkaline silver halide developer to release an image distribution of diffusible dye and

(c) transferring the image distribution of diffusible dye to an image-receiving layer, wherein the improvement comprises the dye-giving compound corresponds to the following formula:



in which

X represents the diffusible dye-providing radical;

R_1 represents —OR_4 or NHR_5 where R_4 is hydrogen or a acyl radical that may be hydrolyzed under the conditions of photographic development and R_5 is hydrogen, alkyl, aryl, acyl or a heterocyclic group, wherein said R_4 acyl radical and R_5 alkyl, aryl, acyl and heterocyclic radicals include such radicals which together with one of the substituents R_2 and R_3 complete a 5-, 6- or 7-membered heterocyclic ring containing at least one oxygen or nitrogen atom;

R_2 represents hydrogen, alkyl, aryl or a heterocyclic group including such alkyl, aryl and heterocyclic radicals which together with one of the substituents R_1 and R_3 complete a 5-, 6- or 7-membered heterocyclic ring, or a nitrogen atom carrying two substituents; the first substituent is a radical selected from the group consisting of hydrogen, alkyl, aryl and acyl including such alkyl, aryl and acyl radicals which together with R_1 complete a 5-, 6- or 7-

membered heterocyclic ring containing at least one nitrogen atom; the second substituent is a radical selected from the group consisting of hydrogen and a radical that together with R_3 completes a 5-, 6- or 7-membered heterocyclic ring containing at least one nitrogen atom; but the two substituents at the nitrogen atom are not both at the same time hydrogen; and R_3 represents hydrogen, alkyl, aryl, a heterocyclic group, acyl, cyano or a radical that together with one of the substituents R_1 and R_2 completes a 5, 6- or 7-membered heterocyclic ring;

at least one of the substituents R_1, R_2 and R_3 or a heterocyclic ring completed by two of these substituents carries a ballasting radical and the released diffusible dye-providing radical has a free sulfonamide group.

4,198,236

METHOD FOR PREPARATION OF LITHOGRAPHIC PRINTING PLATE HAVING ADDITION POLYMERIZED AREAS AND BINDER AREAS

Robert P. Held, Englishtown, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 808,906, Jun. 22, 1977, Pat. No. 4,147,549, which is a continuation-in-part of Ser. No. 614,229, Sep. 17, 1975, abandoned, which is a continuation-in-part of Ser. No. 435,411, Jan. 21, 1974, abandoned. This application Nov. 30, 1978, Ser. No. 965,074

Int. Cl.[2] G03F *7/02*; G03C *5/00*

U.S. Cl. 430—306 **8 Claims**

1. A method of preparing a printing plate comprising:

(a) exposing to actinic radiation imagewise an element comprising a support bearing a layer of a photopolymerizable material which is comprised of a polymerization initiator, a hydrophilic or oleophilic macromolecular organic polymeric binder, and an addition polymerizable ethylenically unsaturated leachable monomeric compound of hydrophilic or oleophilic character opposite that of the polymeric binder, and

(b) leaching said ethylenically unsaturated compound from the binder in the unexposed areas of the layer, leaving the binder remaining in said areas.

4,198,237

IMAGE FORMING MATERIALS AND IMAGE FORMING PROCESS

Akira Nahara; Yoshihiro Ono; Tomizo Namiki; Shigeo Harada; Yuzo Mizobuchi, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 818,912, Jul. 25, 1977, abandoned. This application Apr. 3, 1979, Ser. No. 26,713

Claims priority, application Japan, Jul. 28, 1976, 51-90495

Int. Cl.[2] G03C *1/48*; G03F *7/02*

U.S. Cl. 430—415 **29 Claims**

1. In an image forming material comprising a support having thereon a layer composed of a Ge—S composition or a Ge—S—X composition, wherein X represents at least one element selected from the group consisting of Al, Si, Mg, Ti, V, Mn, Co, Ni, Sn, Zn, Pd, In, Se, Te, Fe, I, P and O, which undergoes a structural change capable of being detected optically, electrically or chemically upon exposure imagewise to light, in contact with a continuous or discontinuous layer of (a) a metal selected from the group consisting of Ag, Cu, Ge, Zn, Cd, Au, Pb, Al, Ga, In, Sn, V, Se, Cr, Fe, Tl, Bi, Mg, Mn, Co, Ni, Sb, Te and Pd or (b) a metal compound selected from the group consisting of halides of metals of Group IB, Group IVB or Group VIB of the Periodic Table, sulfides of metals of Group IB, Group IIB, Group IVB or Group VIII of the Periodic Table, and oxides of metals of Group IV, Group V or Group VI of the Periodic Table; wherein upon exposure to light said Ge—S or Ge—S—X composition layer interacts with said metal or metal compound containing layer and thereby forms a visible image which has a different hydrophilicity or hydrophobicity in the exposed areas than in the non-exposed areas; wherein the improvement comprises:

said Ge—S or Ge—S—X composition layer has a thickness of at least about 300A, and

said Ge—S composition or said Ge—S—X composition contains at least one element selected from the group consisting of Ag, Cu and Pb in an amount of more than two atoms of Ag, Cu and/or Pb based on 100 atoms of the Ge—S composition or the Ge—S—X composition.

4,198,238

PHOTOPOLYMERIZABLE COMPOSITION

Bernard J. Scheve, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

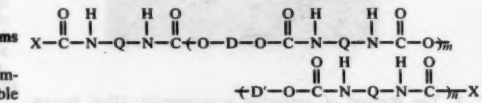
Continuation-in-part of Ser. No. 917,999, Jun. 22, 1978. This application Sep. 21, 1978, Ser. No. 944,455

Int. Cl.[2] G03C *5/00, 1/68*

U.S. Cl. 430—286 **6 Claims**

1. A photopolymerizable composition comprising:

(A) about 10% to about 45% by weight of a liquid polymer having the formula:



where m and n are integers from 0 to 10 and m+n is at least 1, D and D' are polymeric backbones selected from hydroxy terminated homopolymers of butadiene, isoprene, chloroprene, styrene, isobutylene, ethylene, epichlorohydrin, ethylene glycol, propylene glycol or neopentyl glycol; or hydroxy terminated copolymers of butadiene and acrylonitrile, butadiene and styrene, butadiene and isoprene, ethylene and neohexene, isobutylene and styrene, isobutylene and acrylonitrile; hydroxy terminated polyesters of saturated or unsaturated dibasic acids and saturated or unsaturated glycols; hydroxy terminated polyester-polyether block copolymers; or combinations of such polymeric backbones; Q is a radical selected from C_4-C_{10} alkylene, C_5-C_8 cycloalkylene, arylene containing 1–2 rings, C_6-C_{12} alkarylene, and alkylene oxyalkylene radicals containing 4–8 carbon atoms and 1–3 oxygen atoms; X is selected from the radical of an alcohol containing one to three ethylenically unsaturated bonds from which a hydrogen atom has been removed from the hydroxyl group, the radical of a primary or secondary alkyl or aralkyl amine containing unsaturation in the alkyl group, from which a hydrogen atom has been removed from the amine group, or the radical of a carboxylic acid selected from acrylic acid and methacrylic acid from which the hydrogen atom on the carboxyl group has been removed;

(B) about 10% to about 45% by weight of a liquid unsaturated polyester produced from an alcoholic component comprising at least one polyol, and an acid component selected from at least one dicarboxylic acid, dianhydride or diester, at least one of said alcoholic and acid components being unsaturated;

(C) about 5% to about 55% by weight of at least one ethylenically unsaturated, addition polymerizable monomer;

(D) about 0.05% to about 4% by weight of a photoinitiator; and

(E) about 0.01% to about 0.2% by weight of at least one thermal polymerization inhibitor, all percentages being based on the total weight of the liquid polymer components and the ethylenically unsaturated monomer component.

4,198,239

COLOR PHOTOGRAPHIC MATERIALS CONTAINING AN ANTISTAIN AGENT

Hans-Heinrich Credner, Hohenschaeftlarn; Rigobert Otto, Leverkusen, and Karl-Wilhelm Schranz, Odenthal-Hahnenberg, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

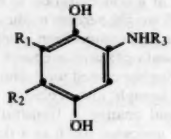
Filed Aug. 31, 1977, Ser. No. 829,229

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1976, 2639930

Int. Cl.² G03C *1/06, 7/00*

U.S. Cl. 430—566 **2 Claims**

1. Light-sensitive color photographic material containing at least one silver halide emulsion layer, characterized by containing an antistain agent of the following formula



in which R_1 and R_2 represent hydrogen, alkyl with up to 3 carbon atoms, halogen, sulpho or carboxyl and R_3 represents an acetyl group substituted with a phenoxy group which may itself be substituted.

4,198,240

SILVER HALIDE PHOTOGRAPHIC EMULSION

Akikazu Mikawa, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 5, 1978, Ser. No. 912,771

Claims priority, application Japan, Jun. 3, 1977, 52/65442

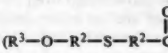
Int. Cl.² G03C *1/28, 1/34*

U.S. Cl. 430—570 **12 Claims**

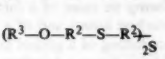
1. A silver halide photographic emulsion containing at least one organic thioether compound in an amount sufficient for sensitizing, wherein said organic thioether compound is represented by formulae (C) to (H):

$$HO-R^2-(S-R^4)_{\overline{2}}S-R^2-OH \quad (C)$$

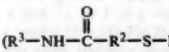
$$(HO-R^2-S-R^2-O-R^4)_{\overline{2}} \quad (D)$$



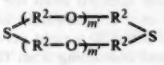
(E)



(F)



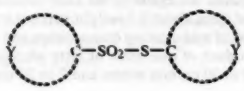
(G)



(H)

wherein r' is an integer of 0 to 3; m' is an integer of 1 or 2; R^2 and R^4 each is an alkylene group having 1 to 5 carbon atoms and R^3 is an alkyl group having 1 to 5 carbon atoms and at least one compound represented by the formulae (I), (II) and/or (III):

$$Z-SO_2-S-M \quad (I)$$



(II)

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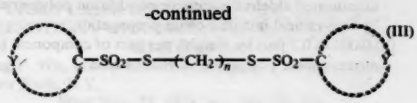


(III)

wherein Z is an alkyl group having 1 to 18 carbon atoms, an aryl group having 6 to 18 carbon atoms or a heterocyclic group; Y represents the atoms necessary for forming an aromatic ring having 6 to 18 carbon atoms or a heterocyclic ring; M is a metal ion or an organic cation; and n is an integer of 2 to 10, said silver halide exhibiting enhanced sensitivity without increased fogging.

4,198,241

PHOTOPOLYMERIZABLE COMPOSITION FOR THE MANUFACTURE OF PRINTING PLATES AND RELIEF PLATES

Bernd Bronstert, Frankenthal; Werner Küesters, Ludigshafen; Mong-Jon Jun, Speyer, and Guenter Wallbillich, Schifferstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 18, 1978, Ser. No. 907,007

Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722421; Dec. 31, 1977, 2759163

Int. Cl.² G03C *1/68*

U.S. Cl. 430—284 **6 Claims**

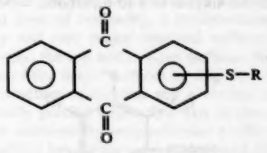
1. A photopolymerizable composition for the manufacture of printing plates and relief plates, consisting essentially of:

(a) a photoinitiator,

(b) at least one, photopolymerizable olefinically unsaturated monomer,

(c) at least one organic polymeric binder compatible with said monomer, and

(d) from about 0.001 to 0.1 percent by weight, based on the total mixture of said components (a), (b) and (c), distributed homogeneously in said mixture, of an etherified thioanthraquinone of the formula



wherein R is alkyl of 1 to 12 carbon atoms, alkyl of 1 to 8 carbon atoms which is substituted by a free, etherified or esterified hydroxyl group or by an alkoxycarbonyl group, or unsubstituted or substituted phenyl.

4,198,242

PHOTOPOLYMERIZABLE COMPOSITION CONTAINING AN O-NITROAROMATIC COMPOUND AS PHOTOINHIBITOR

José F. Pazos, Claymont, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 758,699, Jan. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 667,536, Mar. 17, 1976, abandoned. This application Jun. 8, 1978, Ser. No. 913,906

Int. Cl.² G03C *2/68*

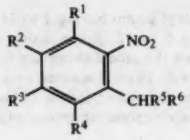
U.S. Cl. 430—286 **19 Claims**

1. A photopolymerizable coating composition in which the photopolymerizable and photosensitive components consist essentially of

(a) normally nongaseous, ethylenically unsaturated compound selected from the group consisting of unsaturated esters of polyols, unsaturated amides, vinyl esters and

unsaturated aldehydes capable of addition polymerization by free-radical initiated chain propagation,

(b) 0.004 to 0.7 part by weight, per part of component (a), of nitroaromatic compound of the formula



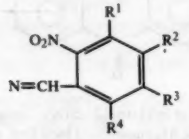
wherein

R^1, R^2, R^3 and R^4, alike or different, are H, OH, halogen, NO_2, CN, alkyl of 1 to 18 carbons, alkoxy in which the alkyl is of 1 to 18 carbons, acyloxy of 2–7 carbons, aryl of 6 to 18 carbons, benzyl, halogen-substituted phenyl, polyether of 2 to 18 carbons and 2 to 10 oxygens, dialkylamino in which each alkyl is of 1 to 18 carbons, thioalkyl in which the alkyl is of 1 to 18 carbons, or thioaryl in which the aryl is of 6 to 18 carbons, R^2 and R^3, taken together, are $—OCH_2O—$ or $—O-CH_2CH_2O)_q$ in which q is an integer from 1 to 5, or any two of R^1, R^2, R^3 and R^4, taken together, are the residue of a second benzene ring fused onto the benzene nucleus, with the proviso that not more than one of R^1, R^2, R^3 and R^4 is OH or NO_2,

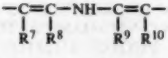
R^5 is H, alkyl of 1 to 18 carbons, halogen, phenyl, or alkoxy in which the alkyl is of 1 to 18 carbons,

R^6 is H, OH, alkyl of 1 to 18 carbons, phenyl, alkoxy in which the alkyl is of 1 to 18 carbons, or aryloxy of 6 to 18 carbons unsubstituted or substituted with halogen, alkyl of 1 to 6 carbons, or alkoxy of 1 to 6 carbons, with the proviso that only one of R^5 and R^6 is H, or

R^5 and R^6 taken together are $=O$, $=CH_2$, $—O—CH_2—$, $=NC_6H_5$, $=NC_6H_4N(alkyl)_2$ in which each alkyl is of 1 to 18 carbons, $—O—C_2H_4—O—$, $=N$ (alkyl) in which the alkyl is of 1 to 6 carbons, $=N$(hydrocarbylene)



in which the hydrocarbylene group is of 1 to 18 carbons, or



in which R^8 and R^9, alike or different, are H or alkyl of 1 to 4 carbons, and R^7 and R^{10}, alike or different, are —CN, $—COR^{11}$ in which R^{11} is alkyl of 1 to 5 carbons, or $—COOR^{12}$ in which R^{12} is alkyl of 1 to 6 carbons which may be interrupted by an oxygen atom, alkenyl of 2 to 5 carbons, or alkynyl of 2 to 5 carbons, or R^7 and R^8 together, or R^9 and R^{10} together, complete a 6-membered carbocyclic ring containing a keto group, and

(c) 0.001 to 10 parts by weight, per part of component (a), of an organic, radiation-sensitive, free-radical generating system, activatable by actinic radiation that does not significantly rearrange the nitroaromatic compound to an inhibitor of free-radical polymerization.

4,198,243

COATING COMPOSITION CONTAINING A LIQUID GLYCOL

Asami Tanaka, 4840 Foster St., Skokie, Ill. 60077

Filed Jan. 19, 1978, Ser. No. 870,655
Int. Cl.[2] C09K 3/00
U.S. Cl. 106—19 **35 Claims**

1. A coating composition, comprising:

a liquid glycol selected from the group consisting of a glycol containing n hydroxyl groups and from n to n+2 carbon atoms where n is 2 to 10, a glycol having the formula $HO—(C_2H_4O)_a—H$ where a is 3 to 20 and a glycol having the formula $HO—(C_3H_6O)_b—H$ where b is 2 to 15, said liquid glycol at a concentration of from about 50 weight percent to about 90 weight percent of said coating composition;

a coloring agent at a concentration in said composition of from about 0.05 weight percent to about 3 weight percent, such that, when said composition is applied as a thin coating to the occlusal surface of one tooth of a pair of occluding teeth and then the coated tooth and the uncoated tooth of said pair are brought into occluding relationship so that a portion of said coating is transferred to the occlusal surface of said uncoated tooth as a thin marking at each contact point between said teeth, said marking has sufficient color intensity to permit visual location of each contact point on the occlusal surface of said uncoated tooth; and

a thickening agent at a concentration in said composition of from about 10 weight percent to about 50 weight percent which comprises a material selected from the group consisting of:

A—a member selected from the group consisting of a solid glycol ester and a solid ethoxylated ester formed therefrom, said solid glycol ester having at least one free hydroxyl group and being an ester of a fatty acid containing from 12 to 22 carbon atoms and of a glycol selected from the group consisting of a glycol containing n hydroxyl groups and from n to n+2 carbon atoms where n is 2 to 10, a glycol having the formula $HO—(C_2H_4O)_d—H$ where d is 3 to 27 and a glycol having the formula $HO—(C_3H_6O)_g—H$ where g is 2 to 20, said ethoxylated ester being a reaction product of 2–30 moles of ethylene oxide and one mole of said solid glycol ester;

B—a mixture of (1) a component at a concentration of from about 3 weight percent to about 50 weight percent of said coating composition and selected from the group consisting of a glycol ester and an ethoxylated ester formed therefrom, said glycol ester having at least one free hydroxyl group and being an ester of a fatty acid containing from 12 to 22 carbon atoms and of a glycol selected from the group consisting of a glycol containing n hydroxyl groups and from n to n+2 carbon atoms where n is 2 to 10, a glycol having the formula $HO—(C_2H_4O)_x—H$ where x is 3 to 27 and a glycol having the formula $HO—(C_3H_6O)_y—H$ where y is 2 to 20, and of (2) a component selected from the group consisting of a fatty acid at a concentration of from about 1 weight percent to about 30 weight percent of said coating composition and containing from 12 to 22 carbon atoms, a fatty acid ester of a fatty acid containing 10 to 22 carbon atoms and of an aliphatic monohydroxyl alcohol containing from 1 to 4 carbon atoms, said fatty acid ester at a concentration of from about 1 weight percent to about 5 weight percent of said coating composition; a fatty alcohol at a concentration of from about 0.1 weight percent of about 5 weight percent of said coating composition and containing from 10 to 30 carbon atoms, an ethoxylated fatty alcohol at a concentration of from about 0.3 weight percent to about 2 weight percent of said coating composition and which is a reaction product of one mole of fatty alcohol containing from 10 to 30 carbon atoms and 2 to 30 moles of

ethylene oxide, an aliphatic hydrocarbon oil at a concentration of from about 1 weight percent to about 10 weight percent of said coating composition, and an alkanolamine which is at a concentration of from about 1 percent to about 10 weight percent of said coating composition and which is a secondary or tertiary amine containing from 4 to b 9 carbon atoms, with each alkanol moiety thereof containing 2 to 3 carbon atoms; and

C—a mixture of a solid fatty acid at a concentration of from about 7 weight percent to about 40 weight percent of said coating composition and containing 12 to 22 carbon atoms and an alkanolamine which is at a concentration which is about 0.1 to 1.0 of that needed to exactly neutralize said fatty acid in said mixture C and which is a secondary or tertiary amine containing from 4 to 9 carbon atoms, with each alkanol moiety thereof containing 2 to 3 carbon atoms;

said composition being in the form of a readily deformable paste which is capable of being smeared as a thin, immobile coating on the occlusal surface of said coated tooth, a portion of said coating capable of being transferred to the occlusal surface of said uncoated tooth when said pair of occluding teeth is brought into occluding relationship, as a thin marking at each contact point between said teeth, said coating being sufficiently thin to permit said occluding teeth to enter into a substantially unimpaired occluding relationship, the mixture of said liquid glycol and said thickening agent serving as a carrier for said coloring agent and being removable from said teeth by a water rinse.

4,198,244

FLUORESCING AGENTS FOR DENTAL PORCELAIN

David B. Binns, Barlaston, and Ian K. Bloor, Audlem, both of England, assignors to National Research Development Corporation, London, England

Filed Apr. 7, 1978, Ser. No. 894,481
Int. Cl.[2] C09K *3/00, 11/46*
U.S. Cl. 106—35 **12 Claims**

1. A dental porcelain composition, comprising dental procelain and, as fluorescing agents, from 0.05 to 2% by weight CeO_2 and from 0.1 to 0.5% by weight of Tb_2O_3 based on the weight of the procelain.

4,198,245

PROCESS FOR PRODUCING CONCRETE STRUCTURES OF HIGH STRENGTH

Richard L. Ferm, and Robert W. Campbell, both of Lafayette, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 31, 1978, Ser. No. 938,666
Int. Cl.[2] C04B *7/02*
U.S. Cl. 106—97 **9 Claims**

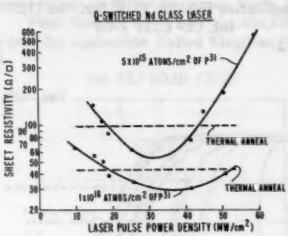
1. A process for increasing the strength of portland cement concrete structures, said concrete comprising aggregate, from 6 to 25% by weight, based upon aggregate, of portland cement and from 1.5 to 20% by weight of alkali metal or alkaline earth metal polysulfide, comprising heating said structure after initial set at a temperature in the range of 110° to 180° C. for a period of at least 0.1 hour.

4,198,246

PULSED LASER IRRADIATION FOR REDUCING RESISTIVITY OF A DOPED POLYCRYSTALLINE SILICON FILM

Chung P. Wu, Mercerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 27, 1978, Ser. No. 963,818
Int. Cl.[2] H01L *21/263*
U.S. Cl. 148—1.5 **8 Claims**



1. A method of reducing the resistivity of a doped polycrystalline silicon film disposed on a substrate comprising the step of irradiating said film with a laser pulse having an energy density of less than about 1.5 joules per square centimeter.

4,198,247

SEALANT FILMS FOR MATERIALS HAVING HIGH INTRINSIC VAPOR PRESSURE

Thomas R. Anthony, Schenectady, N.Y.; Harvey E. Cline, Stanford, Calif., and Douglas E. Houston, Ballston Lake, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,281
Int. Cl.[2] H01L *21/228*
U.S. Cl. 148—1.5 **10 Claims**

1. A process for making a semiconductor device comprising the steps of:

selecting a body of semiconductor material having a predetermined level of resistivity, a predetermined type conductivity and two major opposed surfaces which are, respectively, the top and bottom surfaces thereof with at least one of the major surfaces having a preferred planar crystal structure orientation and a vertical axis which is substantially parallel with a first axis of the crystal structure and substantially perpendicular to the at least one major surface having the preferred crystal planar orientation;

depositing a predetermined thickness of a layer of a first material of a volatile nature in the liquid state on a predetermined portion of the at least one major surface of the body having the preferred crystal planar orientation with the layer of the first material having a predetermined geometrical configuration;

depositing a predetermined thickness of a layer of a second material of a solid and nonvolatile and insoluble nature at the temperature-gradient-zone-melting temperature over the layer of the first material;

heating the body and the first and second materials deposited thereon to an elevated temperature sufficient to form a melt of only the layer of deposited first material and a portion of the semiconductor body in contact therewith;

establishing a unidirectional temperature gradient across the body between the two opposed major surfaces substantially parallel with the vertical axis wherein the surface upon which the melt is formed is at the lower temperature;

migrating the melt comprising the layer of first material and a portion of the semiconductor material in contact therewith through the entire semiconductor body along the unidirectional thermal gradient from the surface of lower temperature to form a region of recrystallized semicon-

ductor material of the body having solid solubility of the deposited first material therein.

4,198,248

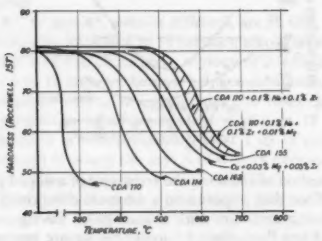
HIGH CONDUCTIVITY AND SOFTENING RESISTANT COPPER BASE ALLOYS AND METHOD THEREFOR

Frank N. Mandigo, North Branford, and John F. Breedis, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 789,967, Apr. 22, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,595

Int. Cl.[2] C22F *1/08*

U.S. Cl. 148—2 **7 Claims**



6. A process which does not depend upon the precipitation of alloying elements for improving both the high temperature softening resistance and strength properties of copper base alloys as well as maintaining a high electrical conductivity for said alloys, which comprises:

(a) casting a copper base alloy consisting essentially of 0.005 to 0.2% by weight niobium, 0.005 to 0.2% by weight zirconium, balance copper;

(b) hot working the alloy to effect the maximum solid solution of all alloying elements;

(c) cooling the alloy to maintain said maximum solid solution of all alloying elements;

(d) annealing said alloy at a temperature which will result in a desired yield strength and electrical conductivity while maintaining said niobium and zirconium essentially in solid solution in said alloy; and

(e) cold working said alloy to the final desired temper.

4,198,249

STEEL SUBSTRATE FOR GLASSING

Charles R. Roper, Jr., Coatesville, and Roy Hetherington, Jr., West Chester, both of Pa., assignors to Lukens Steel Company, Coatesville,, Pa.

Continuation-in-part of Ser. No. 817,443, Jul. 2, 1977, abandoned. This application Sep. 8, 1978, Ser. No. 940,604

Int. Cl.[2] B32B *15/04*; C22C *38/12*

U.S. Cl. 148—36 **7 Claims**

1. A low carbon glassing steel structure having a very fine grain structure for use in glass coating applications without deterioration in strength and impact after multiple high temperature thermal cycles, said steel structure composed of:

ELEMENT	PERCENTAGE BY WEIGHT
Carbon	up to 0.10 percent
Manganese	0.45–1.25 percent
Silicon	0.20–0.65 percent
Niobium	0.02–0.06 percent
Iron and incidental impurities	Balance;

said steel structure having an ASTM ferrite grain size of about 8 or finer, a yield point in excess of 30000 psi and an ultimate tensile strength in excess of 60000 psi, and a minimum Charpy V-Notch energy of 50 foot-pounds at −50° F. in both the longitudinal and transverse directions of the structure, and after being subjected to said thermal cycles.

4,198,250

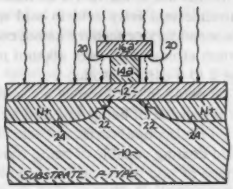
SHADOW MASKING PROCESS FOR FORMING SOURCE AND DRAIN REGIONS FOR FIELD-EFFECT TRANSISTORS AND LIKE REGIONS

Robert M. Jecmen, Sunol, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Feb. 5, 1979, Ser. No. 9,303

Int. Cl.[2] H01L *21/265, 21/31, 7/54*

U.S. Cl. 148—1.5 **9 Claims**



1. An MOS process for forming source and drain regions in a substrate which includes a gate oxide layer and polysilicon layer comprising the steps of:

defining a masking member on said polysilicon layer in a predetermined pattern;

etching said polysilicon layer to form a gate employing said masking member as a mask, said etching being permitted to continue so as to undercut said masking member thereby forming overhangs which overhang said gate;

ion implanting said substrate to form said source and drain regions through said gate oxide, the dosage level of ions implanted being selected so that a lower concentration of impurities is implanted in substrate regions beneath said overhangs than in substrate regions not protected by said masking member;

whereby during subsequent processing steps, said lower concentration of impurities does not substantially diffuse, thereby providing more precise alignment between said gate and said source and drain regions.

4,198,251

METHOD OF MAKING POLYCHROMATIC MONOLITHIC ELECTROLUMINESCENT ASSEMBLY UTILIZING EPITAXIAL DEPOSITION OF GRADED LAYERS

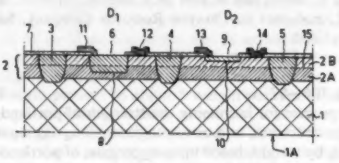
Michel Gaffre, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 836,607, Sep. 26, 1977, abandoned, which is a division of Ser. No. 721,289, Sep. 8, 1976, abandoned. This application Dec. 22, 1977, Ser. No. 863,456

Claims priority, application France, Sep. 18, 1975, 75 28632

Int. Cl.[2] H01L *21/20, 21/82*

U.S. Cl. 148—175 **3 Claims**



1. A method of manufacturing a monolithic electroluminescent semiconductor assembly comprising the steps of forming

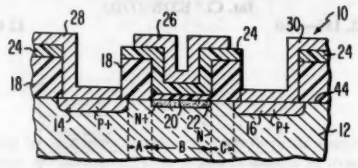
a semiconductor layer of a homogeneous semiconductor compound doped by at least one doping impurity, said semiconductor layer having an impurity concentration decreasing toward a surface of said semiconductor layer, forming at least two electroluminescent diodes that emit respective radiations of different wavelengths at at least two distinct respective areas of said surface by forming at least first and second respective junctions in said semiconductor layer, said first junction being at a more highly doped part of said semiconductor layer than said second junction, wherein said semiconductor layer is formed in a single epitaxial operation from the vapor phase during which only the supply of gas including nitrogen as said at least one doping impurity is varied.

4,198,252

MNOS MEMORY DEVICE

Sheng T. Hsu, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 6, 1978, Ser. No. 894,089
Int. Cl.² H01L *21/26*
U.S. Cl. 148—187 **4 Claims**



1. A process for forming a semiconductor device comprising the steps of:

providing a semiconductor body of N-type conductivity and having a common boundary surface;

forming P-type drain and source regions in the semiconductor body, the drain and source regions sharing the common boundary surface with the semiconductor body and defining a channel region located solely therebetween;

depositing masking oxide on the common boundary surface to cover the drain, source and channel regions;

etching an opening in the masking oxide to expose only a portion of the common boundary surface at the channel region spaced apart from both the source and drain regions;

depositing a thin gate oxide layer on the exposed common boundary surface at the channel region;

implanting N-type conductivity modifiers into the channel region through the gate oxide layer and forming a doped region aligned with the opening;

depositing a layer of insulating material over both the masking oxide and the gate oxide;

etching contact openings through the insulator and masking oxide layers to expose the drain and source regions;

depositing conductive leads in the contact openings in ohmic contact with the drain and source regions; and

providing a conductive head over the thin gate oxide layer to form a gate member.

4,198,253

EXPLOSIVE COMPOSITIONS CONTAINING SULPHONATED GUAR GUM DERIVATIVES

Jitka Kirchnerova, Montreal, and Errol L. Falconer, Mont Saint-Hilaire, both of Canada, assignors to Canadian Industries Limited, Montreal, Canada

Filed Dec. 11, 1978, Ser. No. 968,560
Claims priority, application Canada, Jan. 19, 1978, 295325
Int. Cl.² C06B *33/02*
U.S. Cl. 149—44 **6 Claims**

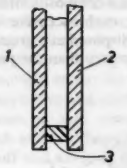
1. A slurry explosive composition comprising at least one inorganic oxygen-supplying salt, a solvent or carrier for the inorganic oxygen-supplying salt, a solid or liquid fuel and a thickener, said thickener comprising a sulfonated guar gum derivative.

4,198,254

VITREOUS SHEETS WITH SYNTHETIC POLYMER SPACER AND PROCESS FOR MAKING THE SAME

Pierre Laroche, Nalinnes, and Jean Rase, Ransart, both of Belgium, assignors to BFG Glassgroup, Paris, France

Filed Nov. 25, 1977, Ser. No. 854,535
Claims priority, application United Kingdom, Nov. 26, 1976, 49416/76
Int. Cl.² B32B *17/00*
U.S. Cl. 156—107 **20 Claims**



1. In a method of manufacturing a hollow panel by uniting vitreous sheets by means of a spacer of synthetic polymeric material located between and adherent to margins of such sheets, the improvement consisting essentially of the steps of (1) laying upon the margin of one of the sheets a hardenable viscoelastic ribbon having cross-sectional dimensions and a viscosity sufficient to maintain the two sheets at at least the required final inter-sheet spacing under the weight of the superimposed sheet when the sheets are disposed horizontally with the ribbon between them, (2) laying the other sheet in generally horizontal position supported by said ribbon, and (3) then subjecting said ribbon to hardening conditions while the sheets are at said final required spacing to convert the ribbon into a spacer having a tensile strength of at least 4 kg/cm², an elongation at break in excess of 50% and a water permeability of the polymeric material less than 0.2 g of water per m² of surface per 24 hours per mm of material thickness per cm of Hg pressure, wherein said viscoelastic ribbon is cured in situ at less than 100° C. to form said spacer, and wherein prior to hardening, said viscoelastic ribbon is capable of resisting significant deformation under the forces imposed by the superencumbent vitreous sheet and of resisting any permanent deformation under any forces which may be imposed by the handling of the ribbon before it is laid on one of the vitreous sheets in the panel assembly operation.

4,198,255

METHOD OF MAKING A MULTI ORIFICE STRUCTURE

Garland E. Busch, Milan, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 796,953, May 16, 1977, Pat. No. 4,127,234. This application May 12, 1978, Ser. No. 905,500
Int. Cl.² B05B *1/14*; B29C *17/02*
U.S. Cl. 156—172 **5 Claims**

1. A method for making a multiorifice structure comprising the steps of:

twisting a first circular layer comprising a first integral number of parallel rods about a central rod to form a central structure having an axis of symmetry concentric with the axis of said central rod and the axes of said first layer of parallel rods being disposed at a first angle with respect to said axis of symmetry;

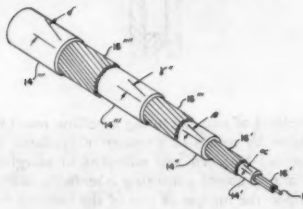
encasing said central structure with a first cylindrical member having an internal surface contacting the external surfaces of said first layer of rods and an external surface

having a diameter selected to support a second integral number of rods about its periphery with the external surfaces of said second integral number rods in contact with each adjacent rod;

twisting a second circular layer comprising a second integral number of parallel rods about said first cylindrical member, the axes said second layer of rods being disposed at a second angle with respect to said axis of symmetry greater than said first angle;

encasing said second layer of rods with a second cylindrical member having an internal surface contacting the surfaces of said second layer or rods and an external surface having diameter selected to support a third integral number of rods about its periphery with the external surfaces of said third integral number or rods in contact with each adjacent rod;

adding alternating layers of parallel rods and cylindrical members to form a composite structure having a predetermined diameter, each succesive layer of rods twisted to have their axes disposed at a greater angle with respect to said axis of symmetry than the preceding layer;



heating said composite structure to a temperature sufficient to cause said layers of parallel rods and cylindrical members to fuse into an integral assembly; and

slicing said fused integral assembly in a direction normal to said axis of symmetry to produce a plurality of wafers, each wafer having a multiplicity of orifices formed by the interstices between said fused rods and said cylindrical members.

4. The method of claim **1** wherein said rods and cylindrical members have known melting temperatures further including the step of coating at least the internal and external surfaces of said cylindrical members with a thin layer of material having a lower melting temperature than the material of said rods and said cylindrical members; and

wherein said step of heating, heats the composite structure to a temperature intermediate the melting temperature of said thin layer and the melting temperature of said rods and cylindrical members to fuse said rods and said cylindrical members into said integral structure.

4,198,256

METHOD OF MAKING A HEAT-SEALABLE ORIENTED POLYPROPYLENE FILM

William J. Andrews, Taunton, and William J. M. Philpott, Bridgewater, both of England, assignors to British Cellophane Limited, England

Continuation of Ser. No. 621,514, Oct. 10, 1975, abandoned, which is a continuation of Ser. No. 405,768, Oct. 12, 1973, abandoned. This application Feb. 9, 1978, Ser. No. 876,227

Claims priority, application United Kingdom, Oct. 17, 1972, 47697/72

Int. Cl.[2] **B32B** *27/08*

U.S. Cl. 156—229 **8 Claims**

1. A method of manufacturing an oriented film product comprising a layer consisting essentially of polypropylene and a layer of a heat-sealable copolymer layer on at least one surface thereof, which comprises the steps of

(1) co-extruding through a die at least two melts, one of said melts comprising a mixture of polypropylene and waste film from step (6), and a second of said at least two melts comprising a linear random copolymer of ethylene and up to 12 mole percent of at least one alpha olefin selected from the group consisting of propylene and butene-1; said co-extruded melts forming a multilayer film;

(2) quenching said multilayer film;

(3) heating said quenched multilayer film to a sufficient temperature for stretch orientation;

(4) stretching said multilayer film in at least one direction to orient the polypropylene component in said multilayer film;

(5) trimming said stretched multilayer film around its edges to produce both a waste film and the oriented film product; and

(6) mixing said waste film with polypropylene to form said mixture of polypropylene and waste film used in step (1).

4,198,257

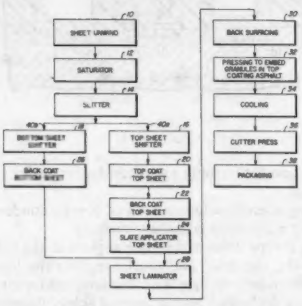
PROCESS FOR MAKING LAMINATED ROOFING SHINGLES

Lloyd A. Pfaff, 16 Fish Haven Rd., Auburndale, Fla. 33823

Filed Feb. 8, 1979, Ser. No. 10,369

Int. Cl.[2] **B32B** *31/00*

U.S. Cl. 156—260 **12 Claims**



1. In a method of manufacturing roofing shingles from a continuous length of felt comprising the steps of saturating the felt with a bituminous liquid, longitudinally cutting the felt into first and second sheets, applying a continuous surface coating of molten bitumen to both sides of the first sheet, applying a continuous surface coating of molten bitumen to one side of the second sheet and laminating the two adjacent coated sides of the first and second sheets together to form a single layered sheet, wherein the improvement comprises laterally shifting both the first and second sheets in opposite directions into a spaced apart overlying relationship where the center lines of both sheets are aligned with the center line of the uncut felt sheet prior to laminating the first and second sheets together.

4,198,258

APPARATUS FOR APPLYING ADHESIVE-COATED LABELS TO CIGARETTE PACKS OR THE LIKE

Josef Glösmann, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Korber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Nov. 16, 1978, Ser. No. 961,196

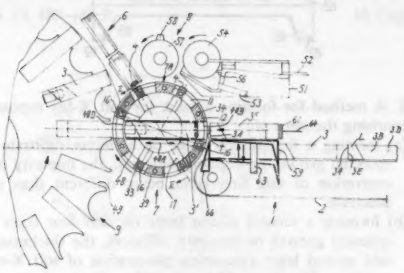
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1977, 2752819

Int. Cl.[2] **B65B** *61/00*

U.S. Cl. 156—484 **16 Claims**

1. Apparatus for applying adhesive labels having a predetermined length to the front end faces and adjacent lateral surfaces of substantially prismatic items, especially packs for cigarettes or the like wherein the width of the front end faces between the lateral surfaces is less than said predetermined

length, comprising means for transporting a series of items along a first path having a discharge end; a source of labels; means for transferring labels from said source, including a hollow rotary member and a plurality of label carriers mounted in and rotatable with said member along an endless second path extending along said source and said discharge end, each of said carriers being movable relative to said member between first and second positions in which the carrier is respectively ready to accept a label from said source and is remote from such label; a folding device in said member, said device defining a passage for successive items of said series and having an inlet adjacent said discharge end inwardly of said second path and an outlet, said carriers having means for re-



taining labels during transfer of labels from sid source to that portion of said second path which is located in front of said inlet and said transferring means further comprising means for moving said carriers to said first positions ahead of said source and to said second positions not later than in said portion of said second path so that each carrier moves away from the respective label while the label extends transversely of and beyond said inlet; and means for advancing successive items of said series from said discharge end into and through said passage whereby the front end face of each oncoming item entrains and is bonded to the label which extends across said inlet and pushes such label against the preceding item while said device folds the end portions of the label over the adjacent lateral surfaces of the respective oncoming item.

4,198,259

APPARATUS FOR THE MANUFACTURE OF BAGS

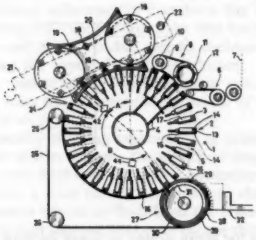
Leonard van der Meulen, Immeuble Saadi el Menzah, Appt. 22A, 6*ieme* Etage Tour A., Tunis, Tunisia

Filed May 30, 1978, Ser. No. 910,104

Claims priority, application Netherlands, Jan. 6, 1977, 7706026

Int. Cl.[2] B31B *19/02, 19/14, 19/60*

U.S. Cl. 156—498 **12 Claims**



1. Apparatus for manufacturing bags from a web of thermoplastic material, comprising:

a plurality of bearers for the web; means for moving said bearers over a pathway; each said bearer having an anvil on one side of said bearer for cooperating with a welding device;

first reduced pressure means on each said bearer for communicating with the web as it engages said bearer, thereby for holding the web to said bearer;

between neighboring said bearers, a respective auxiliary web support being provided; said auxiliary support also including one side thereof on which a web may rest;

second reduced pressure means on each said auxiliary support for communicating with the web as it engages said auxiliary support, thereby for holding the web to said auxiliary support;

means for feeding web material to said bearers toward the upstream end of said pathway; and for feeding web material at a rate for causing a web to be deposited on said bearers and on said auxiliary supports with tension free loops of web material developing between neighboring said bearers and auxiliary supports;

a plurality of welding devices, each for cooperating with a respective said anvil, for cutting and welding the web; welding device moving means for bringing said welding devices to their respective said anvils in a welding section located downstream in said pathway from the initial contact of the web and said bearers and for moving said welding devices off said anvils at the end of said welding section;

said pathway further including a cooling section downstream in said pathway of said welding section;

bag removal means downstream of said cooling section in said circuit for removing bags still supported upon said auxiliary supports.

4,198,260

APPARATUS FOR SEVERING A STACK OF FILMLIKE SECTIONS AND SIMULTANEOUSLY FORMING THEM INTO BLOCKS

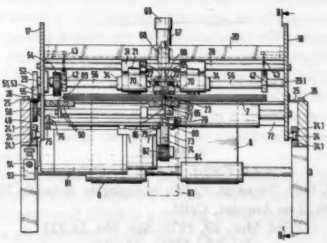
Friedhelm Mundus, and Helmut Simon, both of Lengerich of Westphalia, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Fed. Rep. of Germany

Filed Feb. 8, 1978, Ser. No. 876,160

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1977, 2708853

Int. Cl.[2] B31B *19/14, 19/60*

U.S. Cl. 156—515 **17 Claims**

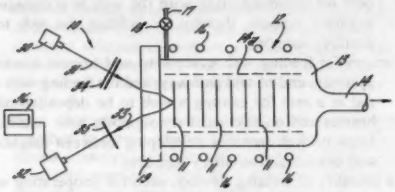


1. Apparatus for severing a stack of film-like sections, such as plastic bags or the like, and simultaneously forming them into blocks, comprising: stacking means having a movable abutment; a pressing and block forming station having a frame, compressing means fixed with respect to the frame for compressing a stack, and a heated knife movable relative to the compressed stack for severing same to form sections and for interconnecting the sections at their cut edges; means for conveying each stack from said stacking means to said pressing and block forming station; and the heated knife being displaceable against the conveying direction to sever the compressed stack.

4,198,261
METHOD FOR END POINT DETECTION DURING PLASMA ETCHING

Heinz H. Busta, Park Ridge; Robert E. Lajos, Crystal Lake, and Kul B. Bhasin, Schaumburg, all of Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 5, 1977, Ser. No. 857,384
Int. Cl.[2] H01L *21/306*
U.S. Cl. 156—626 1 Claim



1. A method of detecting the end point of etching a first layer of material from a second layer of material wherein said materials have different indices of refraction, comprising the steps of:

mounting said materials in an etching chamber;

projecting a beam of light toward a portion of the material to be etched via a first polarizing filter;

reflecting said beam of light from said portion of the material to be etched;

following reflection, passing said beam of light toward a detector, via a second polarizing filter;

adjusting said first and second filters relative to said beam of light so that essentially no light will reach the detector following reflection and/or refraction from either said first or said second layer of material; and

detecting an abrupt change in the intensity of light reaching the detector due to the change in index of refraction from the first layer to the second, as an indication of said end point of etching.

4,198,262
SOLAR CELL MANUFACTURE

Charles F. Gay, Tujunga, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

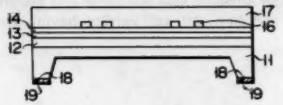
Filed Mar. 29, 1979, Ser. No. 24,921
Int. Cl.[2] H01L *21/306*
U.S. Cl. 156—662 4 Claims

1. In a method for manufacturing solar cells from a silicon wafer having a p-n junction therein, wherein front and back electrical contacts are formed on said wafer by metallization, said back contact material being chosen so that it penetrates said p-n junction and forms a low resistance ohmic contact through said junction, the improvement comprising washing said electrical contact-bearing wafer with a buffered hydrofluoric acid solution having a pH of from about 3.5 to about 6.5 and containing from about 5 to about 10 weight percent hydrofluoric acid based on the total weight of said solution for a time sufficient to reduce the series resistance of said wafer and to improve the solderability of said electrical contacts.

4,198,263
MASK FOR SOFT X-RAYS AND METHOD OF MANUFACTURE

Takashi Matsuda, Kasugai, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 29, 1977, Ser. No. 782,379
Claims priority, application Japan, Mar. 30, 1976, 51/34832; Mar. 30, 1976, 51/34833
Int. Cl.[2] H01L *21/306*
U.S. Cl. 156—639 13 Claims



1. A method for forming a mask for soft X-ray exposure, comprising the steps of:

(a) forming a first silicon layer on a silicon substrate by epitaxial growth or impurity diffusion, the impurity concentration of said first layer being different than said substrate;

(b) forming a second silicon layer on said first layer by epitaxial growth or impurity diffusion, the thickness of said second layer permitting penetration of soft X-rays and being less than said first layer and the impurity concentration of said second layer being different than said first layer;

(c) forming a mask pattern impenetrable to soft X-rays on said second layer by depositing a film of resist material on said second layer, etching a pattern in said film, plating a soft X-ray masking material on said second layer and removing said resist material pattern;

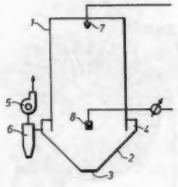
(d) removing said silicon substrate except for its marginal region with an etching solution having an etching rate for said substrate higher than for said first layer; and

(e) removing said first layer except for its marginal region with an etching solution having an etching rate for said first layer higher than said second layer.

4,198,264
PROCESS AND APPARATUS FOR SPRAY DRYING OR SPRAY COOLING

Vaclav Kaspar, Cologne; Hans-Heinz Mölls, Leverkusen; Reinhold Hörnle, Cologne, and Ferdinand Hummes, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 21, 1977, Ser. No. 844,348
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 2651825
Int. Cl.[2] B01D *1/16*
U.S. Cl. 159—4 B 7 Claims



1. A process for spray drying or spray cooling a solution or suspension in a spray drier or cooler including a housing having a central longitudinal axis and an annular channel in the lower portion thereof acting as a sifter, comprising the steps of spraying the product to be dried or cooled and streaming out a gas outwardly in the direction of the housing annularly from

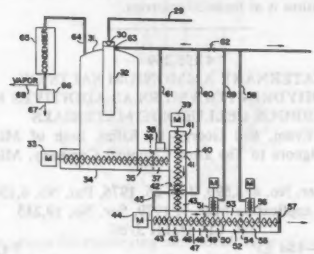
at or adjacent the central longitudinal axis of the drier at substantially a right angle to the central longitudinal axis of the drier by at least one nozzle arranged at or adjacent the central longitudinal axis of the drier and below the sprayed out product to direct selected particles into the sifter.

4,198,265

METHOD OF REMOVING VOLATILES FROM AN ELASTOMER

Charles R. Johnson, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 30, 1977, Ser. No. 855,862
Int. Cl.[2] B01D *1/00*
U.S. Cl. 159—47 R **14 Claims**



1. A method of continuously removing volatile hydrocarbons from a solution of elastomer and volatile hydrocarbons wherein said solution contains up to about 85 percent by weight of said hydrocarbons, said method comprising the steps in sequence of:

(a) releasing the solution of elastomer and volatile hydrocarbons from a zone maintained at a temperature above normal boiling point of the volatile hydrocarbons and at an initial pressure at least sufficient to keep the volatile material in the liquid state, through at least one orifice, said orifice having an initial opening which is wider than the opening at the end of the orifice, into one end of an elongated conduit, which conduit is at a lower pressure than the initial pressure, said conduit having a uniform minimum cross-section area of about 250 times orifice cross-section to about 10,000 times the orifice cross-section, whereby a portion of the volatile hydrocarbons is flashed into vapor and the remaining solution forms discrete crumbs of elastomer having volatile hydrocarbons entrapped therein, at a rate which produces a vapor velocity in the conduit of from 3 to 70 meters per second and a crumb concentration of from 0.25 to 25 percent by volume in the conduit, said crumb concentration and vapor velocity being such as to cause agglomeration of crumbs while limiting production of fines, thereby avoiding plugging of the conduit or adherence of crumbs to the walls thereof;

(b) conducting the vapor and crumbs thus formed out of the opposite end of the conduit into an enclosure;

(c) removing the vapors from the enclosure;

(d) passing said crumbs, which maintain velocity from the conduit, from the enclosure to the screw of the first work section of an extruder;

(e) Mechanically working said crumbs to produce a mass of elastomer and to increase the elastomer temperature;

(f) passing said elastomer through a circumferential annular orifice into a zone of reduced pressure thereby causing hydrocarbon vapors to flash from the elastomer;

(g) allowing said flashing vapors to escape through a vented section in the extruder, wherein said vented section is a cyclindrical, rectangular or tapered vent having a sufficient cross-sectional area to reduce the vapor velocity of the escaping vapors to less than about 6.0 meters per second;

(h) passing said elastomer having a lower content of volatile hydrocarbons to another extruder work section where the elastomer is again worked to increase its temperature;

(i) adding water or an inert gas through an inlet in said second work section and mixing the water or inert gas with the elastomer;

(j) passing said elastomer through a circumferential annular orifice into a zone or reduced pressure thereby causing hydrocarbon vapors to flash from the elastomer;

(k) allowing said vapors to escape through a second vent equipped with a single screw, wherein said screw has a sufficiently large pitch and small root diameter to reduce the vapor velocity to less than about 6.0 meters per second, thereby minimizing entrainment of fines in the vapor; and

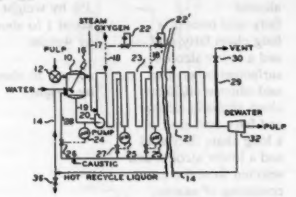
(l) discharging the elastomer from the end of said extruder at a volatile hydrocarbon content or less than about 1.0 percent by weight.

4,198,266

OXYGEN DELIGNIFICATION OF WOOD PULP

Bradley S. Kirk, Warren, and Mark J. Kirschner, West Orange, both of N.J., assignors to Airco, Inc., Montvale, N.J.

Filed Oct. 12, 1977, Ser. No. 841,263
Int. Cl.[2] D21C *3/02*
U.S. Cl. 162—29 **3 Claims**



1. A method of treating a liquid-solid mixture including the steps of passing said mixture through an elongated pipeline reactor having a plurality of gravitational fall zones disposed therein, introducing oxygen gas under superatmospheric pressure into said reactor to establish a gas space at each fall zone with the turbulence imparted to the mixture falling through the gas space at each fall zone resulting in a dissolution of oxygen in the liquid phase of the mixture, the improvement comprising the steps of:

forming said mixture as an essentially thixotropic pulp slurry comprised of at least 2% fibers by introducing pulp, recycle liquor and alkali in a mixing vessel, heating said slurry to a temperature in the range of about 90–160° C; passing said pulp slurry through said reactor in essentially plug flow, whereby oxygen is dissolved in the liquid phase of said slurry at each gravitational fall zone while delignification reactions occur as the slurry is passed through the reactor from one gravitational fall zone to the next; sensing the actual slurry pH at a plurality of said gravitational fall zones of the reactor; adding alkali at said plurality of said gravitational fall zones in response to sensed pH to mix alkali and slurry so that a substantially constant slurry pH between approximately 10.0 and 12 is maintained at each said gravitational fall zone; discharging the delignified pulp slurry from the reactor; separating said slurry discharged from the reactor into pulp and recycle liquor; and returning said recycle liquor to said mixing vessel.

4,198,267

IMPROVED PULP SHEET FORMATION

Edwin H. Flaherty, Pointe Claire, Canada, assignor to Dorset Industrial Chemicals Ltd., Chateauguay, Canada

Filed Jan. 11, 1978, Ser. No. 868,519

Int. Cl.[2] D21H *3/00*

U.S. Cl. 162—158 **2 Claims**

1. In a method of forming a pulp sheet from an aqueous slurry of cellulosic fibrous material fibres, the improvement which comprises introducing to said slurry immediately prior to said sheet formation a composition in an amount effective to improve the formation of said paper sheet as formed, said composition being formed by mixing two separate mixtures A and B of the following compositions in the weight proportion of about 9:1 to about 1:9:

Mixture A	hydrophobic silica	about 6 to about 15% by weight
	hydrocarbon oil	about 82 to about 88% by weight
	surfactant selected from the group consisting of anionic, cationic and non-ionic surfactants	about 1 to about 2% by weight
	fumed silica	about 0.1 to about 0.5% by weight
Mixture B	hydrophobic amide wax	about 6 to about 10% by weight
	hydrocarbon oil	about 85 to about 90% by weight
	silicone oil	about 1 to about 2% by weight
	short chain aliphatic alcohol	about 1.5 to about 3% by weight
	fatty acid ester of a long chain fatty acid and a lower alcohol	about 1 to about 3% by weight
	surfactant other than said silicone oil, short chain aliphatic alcohol and fatty acid ester of a long chain fatty acid and a lower alcohol and selected from the group consisting of anionic, cationic and non-ionic surfactants.	about 1 to about 2% by weight

4,198,268

PROCESS FOR PRODUCING COLORED PAPER USING GRANULATED DYE COMPOSITIONS

Alfred Frei, Thalwil; Helmut Moser, Reinach; Georg Schoefberger, Basel, and August Schweizer, Muttenz, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

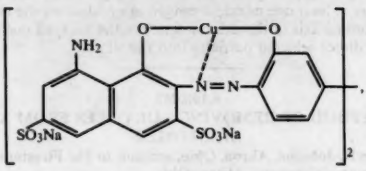
Continuation of Ser. No. 239,360, Mar. 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 60,115, Jul. 31, 1970, abandoned, which is a continuation-in-part of Ser. No. 761,333, Sep. 20, 1968, abandoned. This application Aug. 20, 1975, Ser. No. 605,971

Claims priority, application Switzerland, Sep. 22, 1967, 13321/67

Int. Cl.[2] D21H *3/80*

U.S. Cl. 162—162 **18 Claims**

1. In a process for producing colored paper comprising incorporating a dye composition into paper stock and forming paper from said paper stock the improvement wherein said dye composition is a granulated dye composition, said granulated dye composition comprising (a) the dye of the formula



and (b) 5 to 50% of a salt selected from the group consisting of NaCl, KCl, Na_2SO_4, K_2SO_4, $NaPO_3$, Na_2CO_3, K_2CO_3, $NaH-PO_4$, $Na_4P_2O_7$ and $K_4P_2O_7$, or a mixture thereof, with the proviso that the average size of the granules of said granulated dye composition is at least 20 microns.

4,198,269

QUATERNARY AMMONIUM SALTS OF EPIHALOHYDRIN POLYMERS AS ADDITIVES FOR FIBROUS CELLULOSIC MATERIALS

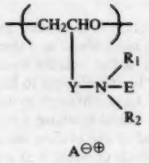
Syamalarao Evani, and George R. Killat, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 652,599, Jan. 26, 1976, Pat. No. 4,156,775. This application Mar. 9, 1979, Ser. No. 19,213

Int. Cl.[2] D21H *3/60*

U.S. Cl. 162—164 EP **7 Claims**

1. A composition comprising cellulosic fibers and a polyether having repeating monomeric units represented by the formula:



wherein each R_1 and R_2 are individually hydrogen, hydrocarbyl, hydroxyhydrocarbyl or aminohydrocarbyl wherein amino is a secondary or tertiary amino; each E is individually a monovalent hydrocarbon radical bearing an epoxy group or a group or groups capable of being converted to an epoxy group or E and R_1 are collectively a propylene or substituted propylene radical wherein the terminal substituents are C_1–C_3 alkyl and the b-carbon substituents are hydroxy, halogen, hydrocarbyl, or hydroxyhydrocarbyl; Y is alkylene and $A^{\ominus}$ represents any anion common to conventional ammonium salts, said polyether being present in an amount sufficient to improve the wet strength of a web formed from the cellulosic fiber.

4,198,270

HEAD BOX FOR A PAPER MAKING MACHINE

Rudiger Kurtz, Immenstaad; Christoph Link, Ravensburg; Wolfgang Trudel, Bad Waldsee, and Siegfried Reutter, Gerbertshaus, all of Fed. Rep. of Germany, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed May 23, 1978, Ser. No. 908,691

Claims priority, application Switzerland, May 23, 1977, 006311/77

Int. Cl.[2] D21F *1/02, 1/06*

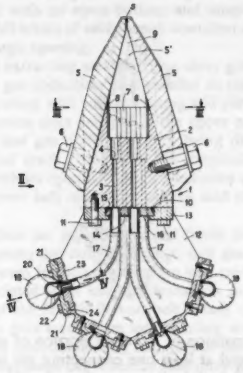
U.S. Cl. 162—343 **8 Claims**

1. A head box comprising a block having a plurality of parallel flow ducts passing therethrough for the flow of pulp, each said flow duct having a stepped widening therein relative

to the direction of pulp flow, said flow ducts being disposed in a plurality of parallel rows;

means defining a conveying channel extending from said block downstream of the flow of pulp and terminating in an exit slot parallel to said rows of flow ducts; and

a feeding means for feeding pulp to said flow ducts in said block, said feedng means including a plurality of distributing pipes for conveying individual flows of pulp, each said pipe having a cross-section of decreasing cross-sectional area in the direction of flow of pulp therethrough, and a plurality of feed pipes interconnected to each respective distribution pipe, each said feed pipe being interconnected between a respective distribution pipe and a respective one of said flow ducts of a respective row of flow ducts in said block.



4,198,271

LIQUID METAL COOLED NUCLEAR REACTOR CONSTRUCTIONS

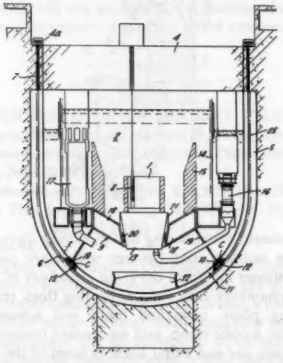
Geoffrey Seed, St. Helens; Donald Hodgson, Ormskirk, and Colin J. Grime, Warrington, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 12, 1977, Ser. No. 824,228

Claims priority, application United Kingdom, Aug. 12, 1976, 33674/76

Int. Cl.[2] G21C *9/00*

U.S. Cl. 176—38 **4 Claims**



1. In a liquid metal cooled nuclear reactor construction comprising

a primary vessel housed with a concrete containment vault, the primary vessel being suspended from the roof structure of the containment vault,

a reactor core submerged in a pool of coolant in the primary vessel, the reactor core being supported from the wall of the base region of the primary vessel,

a leak jacket spaced from and surrounding the primary vessel,

control rods supported from the roof structure of the vault and insertable in the core, the improvement comprising secondary core support means, nonloaded during normal operation of the reactor said means being located in the interspace between the primary vessel and the leak jacket for limiting the extent of downward deflection of the base region of the primary vessel.

4,198,272

FUEL SUB-ASSEMBLIES FOR NUCLEAR REACTORS

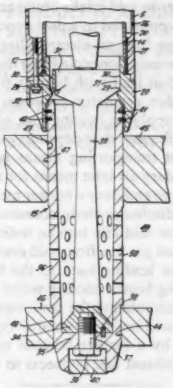
Jonathan S. Salmon, Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed May 18, 1978, Ser. No. 907,351

Claims priority, application United Kingdom, Jun. 3, 1977, 23753/77

Int. Cl.[2] G21C *3/00, 3/30*

U.S. Cl. 176—40 **2 Claims**



1. In a liquid metal cooled fast breeder nuclear reactor having a fuel assembly support structure, and a peripherally restrained up-standing fuel sub-assembly, the improvement wherein said sub-assembly comprises:

a bundle of spaced nuclear fuel pins;

a tubular wrapper enclosing said bundle of fuel pins;

a spike extension for the tubular wrapper for plugging the fuel sub-assembly into said fuel assembly support structure, said spike extension comprising a sleeve having axially spaced cylindrical surfaces defining spigots for engaging vertically spaced sockets in the fuel assembly support structure;

said sleeve being spaced from said wrapper and having an end region enclosed by an end region of the wrapper to define an annular clearance therebetween; and

an elongate resilient tie member pivotably connecting the tubular wrapper and sleeve, the tie-member extending through the sleeve and having one end rigidly secured to the wrapper and another end rigidly secured to the sleeve.

4,198,273
APPARATUS FOR PRODUCING PETROLEUM COKE CALCINATE

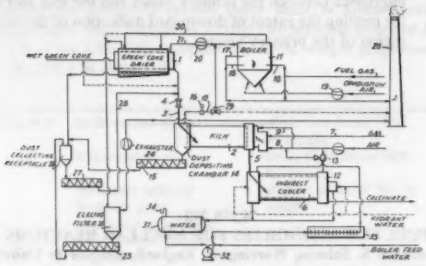
Max Dudek, and Otto Tieke, both of Lingen, Fed. Rep. of Germany, assignors to Wintershall Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 817,115, Jul. 18, 1977. This application Jul. 12, 1978, Ser. No. 924,081

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1976, 2633789

Int. Cl.² C10B *1/10*

U.S. Cl. 202—136 **3 Claims**



1. Apparatus for calcining petroleum coke comprising in combination an indirectly heated rotating green coke dryer having its discharge end connected to the intake chute of a calcining rotary kiln with a one-way valve permitting gas to flow from said dryer to said intake chute and this intake end of the kiln also being connected to a dust depositing chamber and a lean gas discharge line; an electro-filter connected to said dryer with further means connected to a dust collecting receptacle; a vapor conduit lead with blower from said dryer to a steam boiler; a valve regulator between said kiln and said boiler; means for supplying heating gas, primary air and secondary air to said kiln; said dust depositing chamber connected by means of a dust transporting means to a dust collecting receptacle; a secondary air inlet means for said kiln located on the product discharge end over a burner means; a partly water-cooled brick-lined discharge chute connected to said kiln conveying material from said kiln into an indirectly cooled rotating cooler; an exhaust gas line from said cooler connected to an air-operated injector leading back to the burner in said kiln; means for conducting heated cooling water from said cooler to an air cooler and recirculating the same water into the indirect cooler; connecting said boiler by conduit connection with said indirect dryer and by a further conduit to said electro-filter from which a gas exhaust line connects to a smokestack.

4,198,274
DOOR FOR A COKE OVEN FURNACE

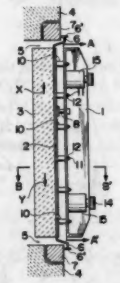
Kazumi Ikio, Kita-Kyushu, Japan, assignor to Ikio Iron Works Co., Ltd., Japan

Filed Feb. 2, 1978, Ser. No. 856,517

Int. Cl.² C10B *25/06, 25/16*

U.S. Cl. 202—248 **2 Claims**

1. A coke oven door construction for closing an opening in a coke oven furnace comprising a vertically elongated brick supporter for carrying a brick block in the coke oven furnace opening which is exposed to high temperature within the coke oven furnace, a door body spaced from the brick supporter and connected thereto for carrying the brick supporter in the coke oven furnace opening, said brick supporter being subject to vertical thermal expansion of varying degree along its vertical length due to the high temperature in the coke oven furnace with higher expansion at an upper portion than at a lower portion of said brick supporter, at least one connecting pin rigidly connected between said brick supporter and said door body at one vertical location on said door body, a plurality of spaced sliding mechanisms connected between said brick supporter and said door body for providing a sliding engagement between said brick supporter and said door body, whereby vertical thermal expansion of said brick supporter is not transmitted to said door body so that said brick supporter and door body are not warped and distorted, said at least one connecting pin being connected at a vertical position above the central vertical position of said door body and brick supporter so that



the thermal expansion of an upper portion of said brick supporter above said at least one connecting pin is equal to the thermal expansion of the lower portion of said brick supporter below said connecting pin, a sealing plate connected around the periphery of said brick supporter, and a knife edge connected around the periphery of said sealing plate bearing against a periphery of the coke oven furnace opening to maintain a seal between said brick supporter and the coke oven furnace opening.

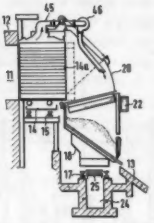
4,198,275
EQUIPMENT FOR EXTRACTING AND PURIFYING DIRTY GASES ARISING ON THE COKE SIDE OF A BATTERY OF CHAMBER COKE OVENS WITH VERTICAL FLUES

Johann G. Riecker, Ratingen, and Klaus Grohmann, Kaarst, both of Fed. Rep. of Germany, assignors to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 27, 1977, Ser. No. 845,869

Int. Cl.² C10B *33/00, 39/14*

U.S. Cl. 202—263 **12 Claims**



1. Equipment for extracting and purifying dirty gases originating from red-hot coke batches which are pushed into a quench container car from the oven chambers of a battery of coke oven chambers with vertical heating flues, transported to a quenching plant, quenched there and subsequently discharged onto a coke ramp, said equipment comprising:

a coke guide car and a first track in front of the oven chambers and parallel to the longitudinal axis of the battery, said guide car being movable on said first track;

a second track below and parallel to the coke guide car and located on the side of the guide car facing away from the

battery; said second track including two spaced-apart parallel rails

a quench train movable on said second track and including said quench container car and a quench locomotive for moving said quench container car along said guide car and said oven chambers, said quench container car having an upper charge opening and a means for closing said charge opening, said coke guide car having a connected extraction hood with an open bottom and adapted to extend over the full width of said quench container car above said upper charge opening;

a device for extracting and purifying dirty gases;

a stationary gas collection duct parallel to said battery and communicating with said extracting and purifying device, said collection duct defining in the upper part thereof an opening; said gas collection duct being disposed below said second track parallel to the longitudinal direction thereof with its opening oriented between said two rails;

a flexible cover belt means for sealing said collection duct opening;

a gas transition car adjacent to, and freely movable along, said stationary gas collection duct; said gas transition car having means for being moved on said second track;

means associated with said gas transition car for lifting a portion of the length of said belt means off of said gas collection duct away from said opening; and

an extraction duct connecting said quench container car and said gas transition car whereby said dirty gases pass from the opening at the bottom of said extraction hood to said quench container car and in sequence through said extraction duct, gas transition car, and collection duct to said extracting and purifying device as said quench car and gas transition car are moved along said battery of ovens.

4,198,276

PROCESS FOR THERMALLY STABILIZING STEROLS

Ralph F. Johnson, Crystal, and Jimmy A. DeMars, Blaine, both of Minn., assignors to The Henkel Corporation, Minneapolis, Minn.

Filed Jun. 24, 1977, Ser. No. 810,552
Int. Cl.[2] B01D *3/06*; C07J *9/00*; B01D *1/22*
U.S. Cl. 203—6 **9 Claims**

1. The process of thermally stabilizing sterols comprising:

(a) obtaining a sterol containing source material which has present therein a Friedel-Crafts catalyst,

(b) wherein the sterol containing source material is first rapidly distilled in a period of less than about ten minutes,

(c) to yield a distillate which is substantially free of the Friedel-Crafts catalyst, and the Friedel-Crafts catalyst is present in the resultant residue,

such that the sterols are present in the distillate in about the same relative proportions as in the sterol containing source material.

4,198,277

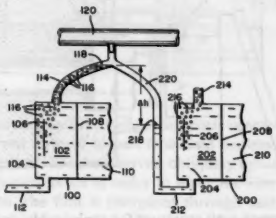
ELECTROLYSIS OF AQUEOUS SALT SOLUTIONS

Bruce E. Kurtz, Marcellus, and Robert H. Fitch, Syracuse, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 866,120, Dec. 30, 1977, abandoned. This application Aug. 21, 1978, Ser. No. 934,757
Int. Cl.[2] C25B *1/16, 1/26*
U.S. Cl. 204—98 **3 Claims**

1. In a process for producing chlorine and sodium hydroxide wherein aqueous sodium chloride is electrolyzed in a bank of a plurality of electrolytic cells, each cell having a cathode compartment and an anode compartment separated by a cationic permeable membrane, the improvement which comprises:

(a) transferring the catholyte serially from the cathode compartment of one or more preceding cells to the cathode compartment of at least one succeeding cell in the bank and providing electrical isolation between the cathode compartment by means of a gas-lift in which hydrogen produced in the cathode compartment rises through the sodium hydroxide catholyte solution in a confined space and lifts said catholyte solution to a disengaging point where the hydrogen is separated and the catholyte is allowed to fall freely through a confined void space to a predetermined point where it is collected and fed by gravity to the cathode compartment of a succeeding cell; and



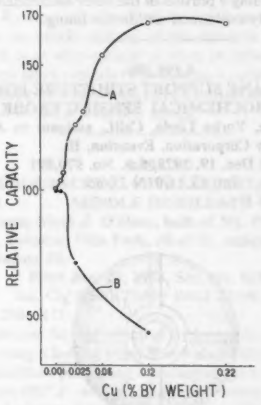
(b) maintaining the electric current on the cathode in said preceding cells such that $C_dK = D/H$, wherein C_d is the current density, D is the depth of the cathode compartment, H is the height of the cathode compartment and K is a proportionality constant having a value between 0.01 and 2.0.

4,198,278

METHOD FOR PRODUCING ANODE ALUMINUM FOILS FOR ELECTROLYTIC CONDENSERS

Masashi Mehada, Matsubara; Masahiko Kawai, Daito; Mitsuo Sasaki, Tondabaya, and Tohru Kimura, Nara, all of Japan, assignors to Toyo Aluminum Kabushiki Kaisha, Osaka, Japan

Filed Jun. 1, 1978, Ser. No. 911,507
Claims priority, application Japan, Jun. 10, 1977, 52-69155
Int. Cl.[2] C25F *3/04*
U.S. Cl. 204—129.75 **7 Claims**



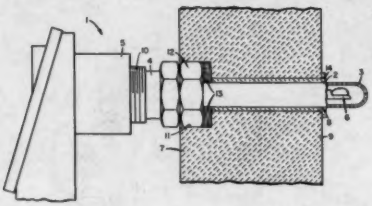
1. In a method for producing an anode aluminum foil for an electrolytic condenser by electrolytically etching an aluminum foil in an aqueous solution of neutral chloride, the improvement which comprises:

providing said aluminum foil in a form which is hard tempered and consisting of 99.9 to 99.99% pure aluminum added with more than 0.010 to 0.25% by weight of copper as an alloying element for increasing the density of the fine tunnel-like pits which grow inward said foil.

4,198,279
OXYGEN SENSOR MOUNTING STRUCTURE

John T. Brown, and Jerry W. Hoskins, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 10, 1977, Ser. No. 850,224
Int. Cl.[2] G01N 27/46
U.S. Cl. 204—195 S 8 Claims



1. A furnace wall structure for replaceably and protectively mounting an oxygen sensor probe to accurately measure the oxygen content of flowing elevated temperature combustion gas atmosphere of the furnace on a hot side of the wall, which structure comprises:

a wall for confining the elevated temperature atmosphere on the hot side thereof,

a probe-receiving bore extending through the wall from the hot side to a cold side thereof,

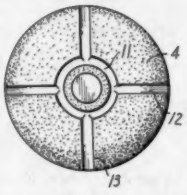
a flexible fibrous refractory material disposed within the probe-receiving bore thereby forming a cushioned lining in contact with the wall surface defining the bore and extending from the hot side to near the cold side for sealing and thermally insulating the probe within the bore, and

an oxygen sensor probe comprising a solid electrolyte tube with a closed end sensing tip and an outer electroded surface, the probe being replaceably positioned to extend from the cold side to the hot side within the bore and within the cushioned lining with a portion of the sensing tip exposed near the hot side to contact the elevated temperature atmosphere and with the majority of the tube length, including a portion of the outer electroded surface, being sealably cushioned within the lining.

4,198,280
MEMBRANE SUPPORT STRUCTURE FOR ELECTROCHEMICAL SENSING PROBE

Dorian J. Swartz, Yorba Linda, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Dec. 19, 1978, Ser. No. 970,891
Int. Cl.[2] G01N 27/46
U.S. Cl. 204—195 P 6 Claims

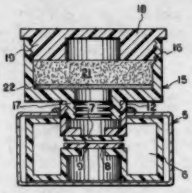


1. An electrolyte housing for an electrochemical sensing probe that has a membrane held against an electrode support, whereby the improvement comprises: a retaining member having a protruding annular section which uniformly presses the membrane against the electrode support; said electrode support having a surface roughened to a given depth; and a lateral channel in the electrode support's end surface that is substantially deeper than the roughened surface, which channel extends laterally across the protruding annular section to prevent the blocking seal to occur between the protruding annular section and the membrane.

4,198,281
SOLVATOR PLUG

David N. Kramer, Stevenson; Stephen E. Long, Baltimore, and Alan A. Schneider, Reisterstown, all of Md., assignors to Catalyst Research Corporation, Baltimore, Md.

Filed Jun. 12, 1979, Ser. No. 47,682
Int. Cl.[2] G01N 27/26
U.S. Cl. 204—195 R 5 Claims



1. A solvator plug for replenishing a solvent in the electrochemical sensing cell comprising:

(a) a housing having an attachment means adapted to be communicatingly mounted to the inlet port of a sensing cell;

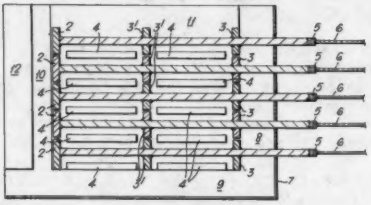
b. a chamber for containing a solvent the vapor of which is adapted to be delivered to the sensing cell;

c. means for containing said solvent within the chamber but permitting the vapors thereof to diffuse from the chamber through said attachment means.

4,198,282
REPLACEABLE CATHODE UNIT SUITABLE AS A MODULE FOR BUILDING UP OF STABLE, NON-DEFORMABLE CATHODE SYSTEMS IN ELECTROLYZERS FOR THE PRODUCTION OF MAGNESIUM, AND AN ELECTROLYZER WITH CATHODE UNITS INCORPORATED THEREIN

Knut A. Andreassen; Henry K. Johnsen; Peder R. Solheim, all of Porsgrunn, and Sigbjorn Kleveland, Oslo, all of Norway, assignors to Norsk Hydro A.S, Oslo, Norway

Filed May 22, 1978, Ser. No. 908,235
Claims priority, application Norway, Jun. 1, 1977, 771957
Int. Cl.[2] C25C 3/04, 3/08, 3/16, 7/02
U.S. Cl. 204—243 R 11 Claims



1. A replaceable cathode unit suitable as a module for the assembly of stable, non-deformable cathode systems in electrolyzers for the production of magnesium by melted salt electrolysis, said cathode unit comprising:

a straight, longitudinally extending main cathode having active cathode side surfaces and front and back ends;

first and second shorter end transverse cathodes arranged at approximately right angles to said main cathode at said

front end and said back end thereof, respectively, said transverse cathodes being arranged symmetrically with respect to said main cathode and extending equal distances from said side surfaces thereof;

at least one intermediate transverse cathode extending from said main cathode between said first and second end transverse cathodes; and

said transverse cathodes being adapted to align with transverse cathodes of adjacent main cathodes to define plural anode spaces.

4,198,283

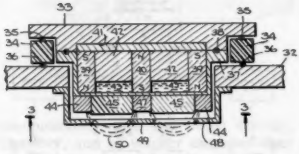
MAGNETRON SPUTTERING TARGET AND CATHODE ASSEMBLY

Walter H. Class, Yonkers; George J. Unterkofler, Nanuet, both of N.Y., and Steven D. Hurwitt, Park Ridge, N.J., assignors to Materials Research Corporation, Orangeburg, N.Y.

Filed Nov. 6, 1978, Ser. No. 957,698

Int. Cl.[2] C23C *15/00*

U.S. Cl. 204—298 **26 Claims**



1. A cathode assembly for use in a magnetron sputtering apparatus having an evacuable chamber, the cathode assembly being adapted to be mounted in the chamber and including a sputtering target, a support means for the sputtering target, means for mounting the sputtering target in electrically and thermally conductive contact with the support means, and magnetic means positioned in the vicinity of the target for providing an arched, closed-loop magnetic field over a sputtering surface of the target, the improvement wherein the sputtering target comprises:

a set of four straight bars composed at least partly of material to be sputter-deposited onto substrates, the set containing a pair of side bars and a pair of end bars, each side bar and each end bar having an inner side, an outer side, a front face, a rear face, and two ends, the four bars of the set being shaped at the ends so that the bars can be assembled as a rectangular frame with the inner sides of each pair of bars facing each other and with the front faces of the four bars providing a rectangular annular sputtering surface, the thus assembled set of target bars being adapted to be held by said mounting means with the rear faces of said bars in electrically and thermally conductive contact with the support means of said cathode assembly.

4,198,284

ELECTROPHORETIC APPARATUS

Toshio Shinohara, Chofu, and Ryo Fujimori, Hachiouji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

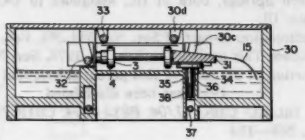
Filed Apr. 23, 1979, Ser. No. 32,222

Claims priority, application Japan, Apr. 27, 1978, 53-55250[U]; Apr. 27, 1978, 53-55251[U]

Int. Cl.[2] G01N *27/26, 27/28*

U.S. Cl. 204—299 R **6 Claims**

1. An electrophoretic apparatus comprising a pair of endless belts, a pair of long board-like filter paper supports arranged on the outer sides of said pair of endless belts, a pair of filter paper retainers arranged above said pair of filter paper supports, buffer solution troughs arranged on the outer sides of said pair of filter paper supports, and two sheets of filter paper, each sheet of filter paper being arranged that its one edge portion rests on the top surface of one of said filter paper supports and the other edge portion is arranged in one of said buffer solution troughs and dipped into buffer solution, said electrophoretic apparatus is arranged that, after a film is conveyed into said apparatus by means of said endless belts, edge portions of said film are held between said filter paper supports and filter paper



retainers by moving said filter paper supports upward, the film is thereby moved upward to part from said endless belts, said filter paper supports are then moved obliquely upward so that they part from each other in order to make the film free from slack and, then, the film is energized through said sheets of filter paper in the state that the film is free from slack.

4,198,285

OXIDATION OF HYDROCARBON WAXES IN THE PRESENCE OF SULFOBETAINES

Donald D. Carlos, Grayson, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 918,131, Jun. 22, 1978. This application Jan. 9, 1979, Ser. No. 2,088

Int. Cl.[2] C07C *27/10;* C09F *7/02;* C07C *27/16*

U.S. Cl. 208—3 **10 Claims**

1. A process for oxidizing liquid hydrocarbon waxes and petrolatums comprising blowing an oxidizing gas through the liquid mass of said hydrocarbon in the presence of a sulfobetaine of the formula:

$$R_2—\overset{\displaystyle R_1}{\underset{\displaystyle R_3}{\overset{|}{\underset{|}{N^+}}}}—R_4SO_3—$$

wherein R_1 is an alkyl radical having from 10 to 18 carbon atoms or an amido radical of the formula $RCONH(CH_2)_3$ wherein R is an alkyl radical of 10 to 18 carbon atoms, R_2 and R_3 are each alkyl radicals of 1 to about 3 carbon atoms, and R_4 is an alkylene or hydroxyalkylene or hydroxyalkylene radical of about 1 to about 4 carbon atoms.

4,198,286

HYDROCRACKING CATALYST SELECTIVE TO MIDDLE DISTILLATE

Lee Hilfman; Mark J. O'Hara, both of Mt. Prospect, and Russell W. Johnson, Villa Park, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jun. 29, 1978, Ser. No. 920,507

Int. Cl.[2] C10G *13/06;* B01J *27/04, 29/12*

U.S. Cl. 208—111 **1 Claim**

1. A process for the selective hydrocracking of a heavy gas oil possessing a boiling point above about 650° F. to produce a middle distillate possessing a boiling range of from about 300° F. to about 650° F. which comprises contacting said heavy gas oil in a hydrocracking reaction zone with hydrogen at an elevated pressure and an elevated temperature in the presence of a catalyst composite consisting essentially of a rare earth exchanged metal ion aluminosilicate material, wherein said original metal ion content is reduced to a level of about 1% to about 3% of said original metal ion content, at least one metal component selected from the group consisting of Group VIB and Group VIII of the Periodic Table in an amount of from about 0.1% to about 25% of the weight of said composite and from about 1 wt. % to about 3 wt. % sulfate.

4,198,287
METHOD OF REGENERATING COKE-CONTAMINATED CATALYST WITH SIMULTANEOUS COMBUSTION OF CARBON MONOXIDE

Charles L. Hemler, Jr., Mt. Prospect, and Laurence O. Stine, Western Springs, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 654,260, Feb. 2, 1976, abandoned. This application Feb. 17, 1978, Ser. No. 878,963
The portion of the term of this patent subsequent to Aug. 22, 1995, has been disclaimed.
Int. Cl.[2] C10G *11/04;* B01J *8/24;* C01B *29/12*
U.S. Cl. 208—113 33 Claims

1. A method for regenerating a coke-contaminated catalyst with simultaneous carefully-controlled combustion of CO to CO_2 which comprises the steps of:

(a) introducing coke-contaminated catalyst containing from about 0.5 to 1.5 wt. % coke into a regeneration zone;

(b) adding to said regeneration zone, independently of said coke-contaminated catalyst, a CO oxidation promoter selected from the group consisting of compounds of noble metals in an amount on an average daily basis equivalent to form about 0.1 to about 15 wt ppm of the circulating catalyst inventory on an elemental basis to promote the combustion of CO to CO_2, dissolved in a liquid solvent selected from the group consisting of water and a hydrocarbon;

(c) passing oxygen-containing regeneration gas into said regeneration zone in an amount selected to burn said coke from said coke-contaminated catalyst and to provide sufficient excess oxygent to accomplish the desired amount of CO combustion to CO_2;

(d) reacting a first portion of said oxygen-containing regeneration gas with said coke-contaminated catalyst in said regeneration zone at oxidation conditions selected to remove coke from said coke-contaminated catalyst and to produce a flue gas containing CO and wherein said oxidation conditions are sufficient to cause combustion of CO to CO_2 in the presence of said oxidation promoter; and,

(e) simultaneously contacting said flue gas and a second portion of said oxygen-containing regeneration gas with said CO oxidation promoter in said regeneration zone in the presence of regenerated catalyst containing less than 0.3 wt. % coke at said oxidation conditions, thereby making a controlled quantity of exothermic heat of reaction available for operation of said regeneration zone and (ii) decreasing the amount of CO in the flue gas by its combustion to CO_2.

4,198,288
DESLIMING OF POTASH ORES

Nathan M. Levine, and Walter Von Drathen, both of Louisville, Ky., assignors to Celanese Polymer Specialties Company, Louisville, Ky.

Filed Mar. 22, 1979, Ser. No. 22,655
Int. Cl.[2] B03D *1/02*
U.S. Cl. 209—5 10 Claims

1. A process for desliming a potash ore which comprises (1) pulping the ore in saturated brine; (2) treating the pulped ore with about 0.005–0.5 pound per ton of a polygalactomannan gum flocculant, and with about 0.01–1.0 pound per ton of a polyamine collector for the siliceous slime; (3) subjecting the treated ore pulp to froth flotation conditions, and (4) removing the floated siliceous slime; wherein the polyamine collector is a compound corresponding to the formula:

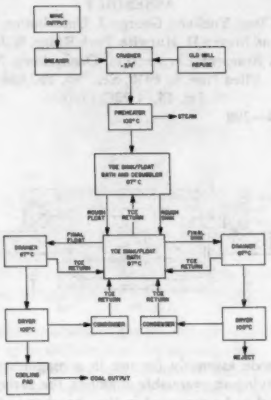
$$NH_2\text{-}(CH_2\text{—}CH_2\text{—}N(R)\text{—})_n\text{—}CH_2\text{—}CH_2\text{—}NH_2$$

wherein R is an aliphatic substituent containing between about 8–24 carbon atoms, between about 1–3 oxygen atoms and is derived from a monoepoxide, n is the integer 1 or 2, and one of the R substituents can be hydrogen when n is 2.

4,198,289
MOBILE, WATERLESS, COAL AND MINERAL SEPARATING METHOD

Guy R. B. Elliott, 103 Grand Canyon Dr., Los Alamos, N. Mex. 87544, and Milton W. McDaniel, P.O. Box 488, Cimarron, N. Mex. 87714

Filed Aug. 7, 1978, Ser. No. 931,452
Int. Cl.[2] B03B *1/02*
U.S. Cl. 209—11 1 Claim



1. A waterless method for separating mine products from refuse comprising:

(a) a single-phase heavy-liquid bath maintained at or near its boiling point, with the heavy liquid comprised of pure compounds or mixtures,

(b) a dried solid mixture of mine products and refuse which is maintained at a temperature slightly above the boiling point of the heavy liquid,

(c) introducing the mixture of mine products and refuse into the bath wherein the outer surfaces of the mine products and refuse will evaporatively cool to the heavy-liquid boiling point and wherein a sink/float separation of mine products and reject will take place,

(d) separately removing the mine products and the reject from the bath,

(e) drainage of the mine products and the reject at a temperature near the boiling point of the heavy liquid,

(f) further heating of the mine products and the reject to boil off small amounts of heavy liquid which may remain after the the drainage,

(g) condensing any vaporized heavy liquid,

(h) returning drained and condensed heavy liquid to the heavy liquid bath, and

(i) delivering separate dry streams of product and reject.

4,198,290
DUST SEPARATING EQUIPMENT

Daniel Summers, "Sunnybank", Leckhampton Hill, Cheltenham, Gloucestershire, England

Filed Apr. 11, 1978, Ser. No. 895,583
Claims priority, application United Kingdom, Apr. 14, 1977, 15597/77
Int. Cl.[2] B04C *3/04;* B01D *45/12*
U.S. Cl. 209—144 6 Claims

1. Apparatus for separating particles of different masses from a gas stream, comprising:

(a) a substantially cylindrical main separation chamber (11)

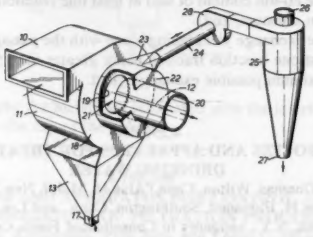
having a side wall and two end walls, and formed with a substantially tangential gas inlet (10) to generate a gas vortex circulating about a vortex axis (12) within said chamber;

(b) an outlet opening (19) in an end wall (18) of said main chamber, said opening lying substantially on the vortex axis;

(c) a main particle extraction opening (13) in the periphery of said main chamber;

(d) at least one internal deflector member (14,15) for separating off heavier particles and directing them towards said extraction opening;

(e) a subsidiary substantially cylindrical separation chamber (22) constructed and arranged to maintain said gas vortex



and communicating with said outlet opening from said main chamber, and of smaller diameter than said main separation chamber, and having a vortex axis passing through said outlet opening;

(f) a final gas outlet (20) communicating directly with said subsidiary chamber and spaced from said outlet opening (19) and lying substantially on the vortex axis of said subsidiary chamber; and

(g) a subsidiary particle extraction opening (23) opening peripherally through said subsidiary chamber, for removing fine particles emerging from the main separation chamber;

(h) said outlet opening (19) and said final gas outlet (20) both being of smaller diameter than said subsidiary chamber (22).

4,198,291

FLOAT-SINK SEPARATION OF COAL WITH LIQUID SO_2

Jin S. Yoo, South Holland, and Emmett H. Burk, Glenwood, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Division of Ser. No. 786,912, Apr. 12, 1977. This application Dec. 26, 1978, Ser. No. 973,417

Int. Cl.[2] B03B *5/44*

U.S. Cl. 209—172.5 **3 Claims**

1. A method for cleaning coal comprising

(a) submerging coal containing ash and pyrite in liquid sulfur dioxide for a time sufficient for a discrete float-sink separation to occur, and

(b) recovering the float portion, a coal product reduced in ash and pyrite.

4,198,292

PROCESS FOR METHANE AND AMMONIA EXTRACTION FROM ORGANIC WASTE

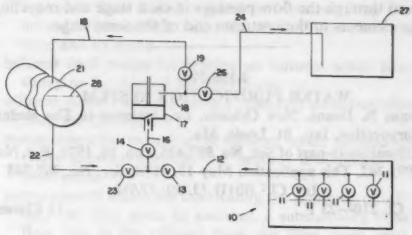
David R. Snider, Vincennes, and J. Clifford Graham, Lafayette, both of Ind., assignors to Graham-Snider Energy Systems, Vincennes, Ind.

Filed Jun. 2, 1978, Ser. No. 912,103

Int. Cl.[2] C02C *1/14*

U.S. Cl. 210—12 **1 Claim**

1. A method of extracting methane and ammonia from livestock waste material by anaerobic bacterial digestion of the material comprising the steps of providing a continuous load displacement type digester tank, forming a slurry of water and the livestock waste material, introducing the slurry into the digester tank to a predetermined level which defines a gas collection chamber in the tank above the slurry level, maintaining the slurry in the digester tank at a temperature of approxi-



mately 37° C. and at a pH within the range of 7.5 to 8.5, providing a conduit communicating with the collection chamber for withdrawing methane and ammonia generated therein by the bacterial digestion process, and maintaining said collection chamber and a portion of said conduit at a pressure within the range of 67.06 to 268.08 mm Hg gage vacuum while the digestion process proceeds.

4,198,293

TUBULAR MEMBRANE SEPARATION PROCESS AND APPARATUS THEREFOR

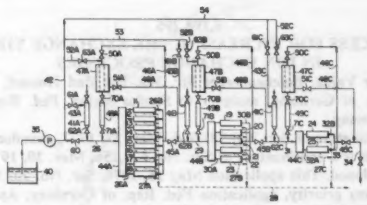
Toshio Ogawa, Takahagi; Katsuya Ebara, Mito, and Sankichi Takahashi, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Plant Engineering and Construction Co., Ltd., Japan

Continuation of Ser. No. 666,415, Mar. 12, 1976, abandoned. This application Mar. 6, 1978, Ser. No. 883,811

Claims priority, application Japan, Mar. 22, 1975, 50-33536

Int. Cl.[2] B01D *13/00, 31/00*

U.S. Cl. 210—23 H **17 Claims**



1. In a tubular membrane separation process which includes feeding a solution to be treated, with the application of pressure, to a module comprised of a tube of a semipermeable membrane and a liquid-permeable support member surrounding the membrane so that a solvent component of the solution can pass through the membrane, and collecting the solvent that has transferred through the membrane with the concomitant production of a concentrated solution in the tubular membrane, a plurality of said modules being connected in parallel to form a stage, a plurality of the stages being connected in series, and said modules arranged in gradually decreased numbers for the stages where the concentration of the solute increases, the improvement comprising passing elastic elements, together with the solution being treated, to the stages, distributing the elastic elements to the modules of the stages, and forcing a plurality of these elastic elements, together with a solution being treated, through the semipermeable membrane in each of the modules, controlling the number of elastic elements passed

to any one stage such that said elastic elements are gradually decreased in number in proportion to the reduction in number of modules per stage, said elastic elements each being softer than said semipermeable membrane, removing deposits from said semipermeable membrane tube by mechanically rubbing an inside surface of the semipermeable membrane tube with said elastic elements as said elements are forced through said semipermeable membrane tube and collecting the elements flowed through the flow passages in each stage and recycling these elements to the upstream end of the same stage.

4,198,294

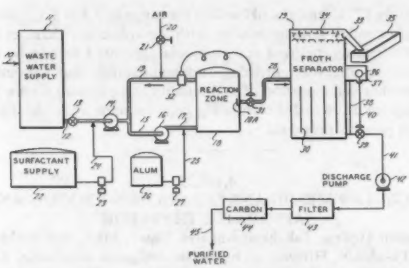
WATER PURIFICATION SYSTEM

Thomas N. Deane, New Orleans, La., assignor to The Redux Corporation, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 587,426, Jun. 16, 1975, Pat. No. 4,092,242. This application May 15, 1978, Ser. No. 905,785

Int. Cl.[2] B01D *13/00, 17/04*

U.S. Cl. 210—23 F **11 Claims**



1. A process of reclaiming waste water from a washing operation employing syndets by adding to said waste water an oil soluble surfactant comprising a group 1 metal salt of an organic acid, emulsifying said surfactant to occlude the suspended solids contained in said waste water, and breaking said emulsion to produce clear water suitable for reuse in washing and rinsing in the washing operation.

4,198,295

PROCESS FOR INCREASING THE EXCHANGE YIELD IN ION EXCHANGE PROCESSES

Sandor Vajna, Reichenberger Str. 30a, 534 Bad Honnef, Fed. Rep. of Germany, assignor to Sandor Vajna, Fed. Rep. of Germany

Continuation of Ser. No. 781,946, Mar. 28, 1977, abandoned, which is a continuation of Ser. No. 672,256, Mar. 30, 1976, abandoned. This application May 26, 1978, Ser. No. 909,943

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1975, 2514222; Sep. 30, 1975, 2543573

Int. Cl.[2] B01D *15/04*

U.S. Cl. 210—25 **33 Claims**

1. In an ion exchange process wherein liquid comprising at least one reaction fraction, a solution containing exchanging counter ions, and water are passed through a washed ion exchanger bed which is filled with water and which is charged with counter ions to be exchanged, the sequential passing of the at least one reaction fraction, the solution containing exchanging ions, and water through the ion exchanger bed constituting an ion exchange reaction of an ion exchange cycle, with the at least one reaction fraction obtained from the corresponding ion exchange reaction in a previous cycle of passing at least one reaction fraction, a solution of the exchanging ions and water through the ion exchanger bed; and wherein after discharging from the bed the first runnings and a product solution containing exchanged counter ions, the same number of reaction fractions, having the same volumes, as delivered to said ion exchanger bed during said reaction is recovered and stored in order to be delivered to said ion exchanger bed as the at least one reaction fraction during the corresponding ion exchange reaction of the next successive cycle, the improvement comprising:

(a) each of said at least one reaction fraction is separately fed to the distributor for distributing liquids to said ion exchanger bed and is distributed to and is passed through said ion exchanger bed, in the same sequence as in the corresponding exchange reaction of the previous cycle, with the mixing with any other liquid distributed to and passed through said ion exchanger bed being minimized, and is separately stored in order to be separately fed to the ion exchanger bed, during the corresponding ion exchange reaction in the next successive cycle, in the same sequence;

(b) the co-ion content of said at least one reaction fraction is kept constant; and

(c) the exchange yield taking place with the passage of the at least one reaction fraction being greater than 50% of the maximum possible exchange yield.

4,198,296

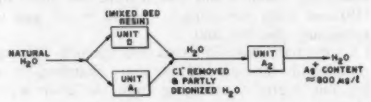
PROCESS AND APPARATUS FOR TREATING DRINKING WATER

John J. Doumas, Wilton, Conn.; Alan H. Molof, New City, N.Y.; Gordon H. Raymond, Southington, Conn., and Lee Wikstrom, Pomona, N.Y., assignors to Consolidated Foods Corporation, Old Greenwich, Conn.

Continuation-in-part of Ser. No. 806,637, Jun. 15, 1977, which is a continuation-in-part of Ser. No. 572,758, Apr. 29, 1975, abandoned. This application Jul. 10, 1978, Ser. No. 922,935

Int. Cl.[2] B01D *15/04*

U.S. Cl. 210—29 **20 Claims**



1. A method of producing biologically safe drinking water from natural water comprising the steps of removing halide ions from said natural water and exchanging for said halide ions an anion which will substantially maintain the original ionic character of said natural water and not inhibit the biocidal effects of bactericides, and introducing a bactericide to said water in a biologically acceptable amount to kill bacteria in said water.

4,198,297

REMOVAL OF TRACE COPPER IONS FROM WATER

Ernesto Valdes-Krieg, Mexico, Mexico; Judson King, and Hugo H. Sephton, both of Kensington, Calif., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

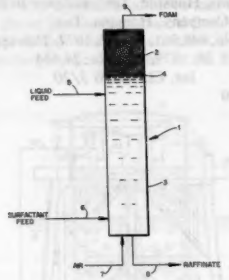
Continuation of Ser. No. 650,395, Jan. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 524,173, Nov. 15, 1974, abandoned. This application Nov. 23, 1976, Ser. No. 744,226

Int. Cl.[2] C02B *1/18*

U.S. Cl. 210—44 **5 Claims**

1. A method for separation or recovery of metal ions from solution in an aqueous feed, said feed containing up to about 10 ppm of said metal ions, consisting of continuously introducing the feed near the top of an elongated vertical bubble fractionation column, the height of said column being at least 24 inches, and simultaneously and continuously introducing (1) a stream of gas bubbles and (2) an anionic surfactant or aqueous solution thereof near the bottom of said column, the rates of introduction of feed, stream of gas bubbles and surfactant being sufficient to provide a flow of liquid phase counter-current to

gas bubbles having a surfactant-loaded liquid interface associated therewith substantially throughout the length of the column, whereby the metal ions associated with the interface are removed at the top of the column.



4,198,298

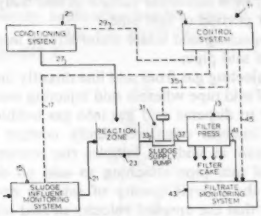
SYSTEM AND APPARATUS FOR CONTROL AND OPTIMIZATION OF FILTRATION PROCESS

Matthew M. Zuckerman, Palo Alto, and Leslie C. Hamer, San Jose, both of Calif., assignors to EDC/Enviro Development Co., Inc., Mountain View, Calif.

Division of Ser. No. 877,168, Feb. 13, 1978, Pat. No. 4,151,080. This application Mar. 12, 1979, Ser. No. 19,495

Int. Cl.[2] B01D *25/12*

U.S. Cl. 210—65 **4 Claims**



1. A process control method of dewatering a solids ladened slurry of water and waste water in a filter press dewatering unit of the kind in which the solids are removed from the slurry and concentrated in the filter press in dewatering cycles, said method comprising,

feeding an influent slurry ladened with relatively incompressible solids to an inlet of the filter press,

removing the solids from the slurry in the filter press and concentrating the removed solids within the filter press,

conducting a relatively solids-free effluent from the filter press,

controlling the pumping of influent into the filter press to maintain a substantially constant flow rate in the effluent from the filter press until the terminal pump pressure of the cycle is reached to thereby maximize the increase of solids within the filter press during the build-to-terminal pressure phase of the pumping operation,

generating a signal characteristic of said terminal pump pressure, and

terminating operation of said pump in response to said signal.

4. A process control apparatus and system for dewatering a solids ladened slurry of water and waste water in a filter press dewatering unit, said system comprising,

a filter press having an inlet, filter cloth chambers for removing solids from the slurry and for concentrating the removed solids in filter cakes within the filter cloth chambers, and an outlet,

influent feed means for feeding an influent solids ladened slurry to the inlet of the filter press,

effluent means for conducting a relatively solid-free effluent from the filter press,

pump means for pumping the influent solids ladened slurry under pressure through the influent feed means to the filter press,

pump control means for controlling the pumping of influent into the filter press to maintain a substantially constant flow rate in the effluent from the filter press until the terminal pump pressure of the cycle is reached to thereby maximize the increase of solids within the filter press during the build-to-terminal pressure phase of the pumping operation,

means to generate a signal characteristic of terminal pump pressure, and

means to terminate operation of said pump in response to said signal.

4,198,299

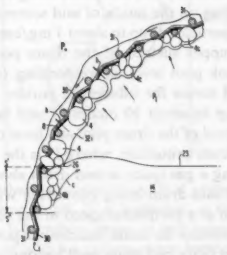
MICROSCREEN METHOD AND APPARATUS

Lloyd Ewing, Milwaukee, and Michael J. Bykowski, West Bend, both of Wis., assignors to Water Pollution Control Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 567,337, Apr. 11, 1975, abandoned, which is a continuation-in-part of Ser. No. 427,600, Dec. 26, 1973, abandoned. This application May 9, 1977, Ser. No. 794,892

Int. Cl.[2] B01D *33/10*

U.S. Cl. 210—77 **37 Claims**



20. In a microscreening process in which microscreen throughput capacity is impaired by drop back, the improved method of microscreening which comprises:

(A) providing a microscreen unit having a tank with stationary walls for containing a tank pool, a drum mounted for rotation in said tank for containing a drum pool, a screening medium having an open area of about 10–60% which defines the peripheral surface of the drum and provides communication of water between said drum pool and tank pool, back flush spray means mounted above and outside the screening medium and collecting means within the drum beneath the back flush spray means;

(B) feeding as influent into said drum pool a dilute aqueous suspension containing about 5 to 1,000 milligrams per liter of suspended microbiological particles;

(C) during said feeding of influent, controlling the upper surface of the drum pool at a level, relative to the tank pool

level, corresponding to a hydraulic pressure head ΔH across the submerged portion of the screen of up to about 10 inches of water, said level not exceeding about 0.4D above the drum center line, where D is the drum diameter, to maintain a gas space above said drum pool surface;

(D) screening said suspension by passing water therefrom through said medium and depositing said suspended microbiological particles on the interior of said drum at a solids loading of up to about 1 milligram per cm^2 while rotating said drum at a peripheral speed in the range of about 30 to 240 feet per minute;

(E) as the screen rotates, transporting said deposited particles on the inside of the screen over that portion of the gas space which extends from the location where said peripheral surface emerges from the drum pool to a location where it passes over said collecting means;

(F) maintaining a pressure differential in the range of about 0.1 to 6 inches of liquid gauge across the medium, which is positive on the inside relative to the outside, in a portion of the medium which is traversing said portion of the gas space, said pressure differential being sufficient to substantially reduce the quantity of particles which drop back into said drum pool from said screening medium, and less than that required to break through segments of water film extending across openings in said portion of the medium; and

(G) directing a spray of back flush water from outside the medium through said peripheral surface over said collecting means at a pressure of about 20–160 psig for dislodging particles from said screening medium and directing the dislodged particles, along with water added thereto by said back flush spray, into said collecting means.

37. In an apparatus for microscreening dilute liquid suspensions of suspended particles including: a stationary walled tank for containing a tank pool; a drum, mounted for rotation in said tank pool, said drum having on its peripheral surface a screening medium with an open area of about 10–60% for containing a drum pool of said liquid suspension and an overlying drum gas space and for providing communication of liquid between said drum pool and tank pool; said drum being connected with means for providing on the inside of said screening medium a solids loading of particles of up to about 1 mg/cm^2 per pass, for maintaining the upper surface of the drum pool at a level, relative to the tank pool level, corresponding to a hydraulic pressure head ΔH across the submerged portion of the screen in the range of up to about 10 inches of said liquid, and for maintaining the level of the drum pool at a level of up to about 0.4D above the drum centerline, where D is the drum diameter, for maintaining a gas space in said drum above said drum pool surface; and said drum being connected with means for rotating said drum at a peripheral speed in the range of about 30–240 feet per minute to cause successive portions of the medium to emerge from said drum pool bearing said particles, the improvement comprising the combination of:

particle collection means within the upper portion of the drum;

back flush spray means outside the drum, positioned over the particle collection means, for discharging back flush spray liquid through the medium at a pressure of about 20 to 160 psig, for dislodging particles from the medium and for introducing a mixture of said particles and added back flush spray liquid into said collection means; and

means, including pressure producing means or gas exhausting means, in communication with said drum, for maintaining across a portion of said medium between where said medium emerges from the drum pool and where it passes over the solids collecting means, a pressure differential in the range of about 0.1 to 6 inches of water gauge which is positive on the inside of the medium relative to the outside thereof, and which is sufficient to reduce the drop back of particles from said portion into said pool.

4,198,300

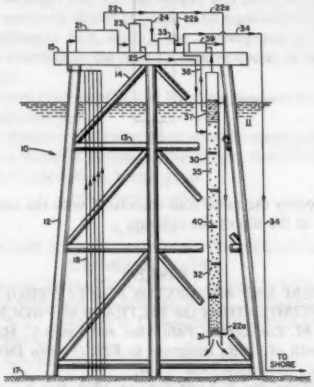
APPARATUS FOR REMOVING SUSPENDED OIL DROPLETS FROM WATER

Robert E. Williams, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Division of Ser. No. 848,961, Nov. 7, 1977. This application Mar. 28, 1979, Ser. No. 24,634

Int. Cl.[2] **E02B** *3/20*

U.S. Cl. 210—170 **5 Claims**



1. Apparatus for separating oil droplets suspended in a waste water stream produced on an offshore rig comprising:

a pipe, having an upper, middle, and lower portion, vertically positioned adjacent said offshore rig in a body of water, said pipe extending from a location above the surface of said body of water to a submerged location substantially below the surface;

a line positioned vertically adjacent said pipe and extending from a location above the surface of said body of water to the lower portion of said pipe;

means for injecting said waste water stream into the middle portion of said pipe;

means for injecting gas from said line directly into the lower portion of said pipe wherein said injecting means includes a diffuser to disperse said gas into gas bubbles such that said gas bubbles countercurrently contact said waste water stream as said gas bubbles rise toward the upper portion of said pipe attaching to said oil droplets and reducing the overall density of said oil droplets sufficiently so that the upward velocity of said oil droplets is greater than the downward velocity of said waste water stream, thereby promoting the separation of said oil droplets from said waste water stream; and

means for withdrawing said oil droplets from the upper portion of said pipe.

4,198,301

FILTER APPARATUS USING FLOATING FILTER MEDIUM

Akitoshi Iwatani, Muragame, Japan, assignor to Ishigaki Kiko Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1978, Ser. No. 935,697

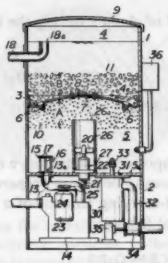
Claims priority, application Japan, May 19, 1978, 53-68337[U]

Int. Cl.[2] **B01D** *29/38, 33/38*

U.S. Cl. 210—274 **10 Claims**

1. A filter apparatus using floating filter medium comprising a filter tank separated by a water-penetrable partition wall into an upper section forming a filtrate reservoir and a lower section forming a filter chamber, floating filter medium in the filter chamber, means for feeding water to be filtered into the bottom of the filter chamber, the water being caused to flow

upwardly passing through the floating filter medium and through the partition wall, the resulting filtrate being removed from the filtrate reservoir, the filter apparatus being further characterized by the improvement comprising an agitating blade provided at a central location in said filter chamber as viewed from above for causing upward flow of water streams, a pit provided beneath said filter chamber, a back-flow washing water discharge pipe provided in the form of a siphon-



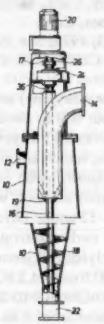
shaped pipe with a discharge opening thereof located adjacent the bottom of the pit, said discharge pipe being provided with a siphon breaker having an air feed port positioned at a level adjacent the bottom of the filter chamber, said means for feeding water including a supply pipe having a feed opening positioned at a suitable location at or adjacent the bottom of the filter chamber and outside the pit for feeding the water to be filtered into said filter chamber.

4,198,302

APPARATUS FOR RELIEVING BLOCKAGE OF THE PULP DISCHARGE PASSAGE IN A CYCLONE IN A PULPING SYSTEM

Johan G. I. Johansson, Taby, Sweden, assignor to Defibrator Aktiebolag, Stockholm, Sweden

Filed Apr. 21, 1978, Ser. No. 898,939
Claims priority, application Sweden, Apr. 28, 1977, 7704941
Int. Cl.[2] B01D *21/26*
U.S. Cl. 210—512 R **8 Claims**



1. In a pulping system in which the pulp stock is treated in an environment of superatmospheric steam and discharged together with the steam into a cyclone separator wherein the steam is separated from the pulp stock and evacuated while the steam-liberated pulp stock is impelled through a discharge passage towards a discharge valve means which is controlled to maintain a predetermined rate of discharge and superatmospheric pressure within the cyclone, the improvement comprising:

(a) a throat member forming part of said discharge passage and tapering towards the discharge valve means;

(b) a screw conveyor having correspondingly tapered screw flights mounted to a shaft to rotate snugly in said throat to propel the pulp stock under a predetermined force towards the discharge valve means, and means for rotating said shaft;

(c) the shaft of said screw conveyor being mounted to reciprocate within said throat during the rotation thereof to allow the screw flights to yield in response to a predetermined excessive thrust resulting from compacted pulp stock blocking the throat, to provide a by-pass passage between the screw flights and the surrounding throat wall;

(d) said shaft comprising two sections, one of said sections supporting said screw flights, the terminal portions of said two opposing shaft sections being interconnected by means of a thrust collar for allowing said one of said shaft sections to reciprocate in said throat while maintaining said other shaft section non-reciprocal, said other shaft being journaled in the end wall of said cyclone opposite to said throat and having a portion projecting beyond said end wall engaging with said means for rotating said shaft, wherein said one of said shaft sections can be reciprocated in said throat without disengaging said shaft from said means for rotating said shaft.

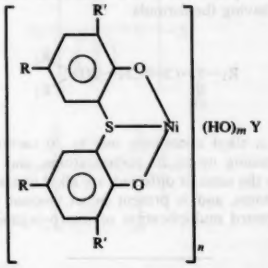
4,198,303

ANTIOXIDANT LUBRICANT COMPOSITIONS

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 1, 1978, Ser. No. 901,938
Int. Cl.[2] C10M *1/54*; C07F *15/04*
U.S. Cl. 252—42.7 **46 Claims**

1. An organosulfur-containing complex comprising a nickel II thiobis (alkylphenolate) complex with an hydroxy substituted ligand having the following general structure:



where R is either hydrogen or an alkyl group having from 1 to about 30 carbon atoms, R' is hydrogen or an alkyl group containing from 1–8 carbon atoms in any isomeric configuration except those in which a carbon atoms bonded to a ring carbon atom is in turn bonded to more than two other carbon atoms, Y is a ligand such that Y (OH) is methanol, ethanol, n-propanol, i-propanol, n-butanol, i-butanol, benzyl alcohol, 3,5-ditertiary-butyl-4-hydroxybenzyl alcohol, phenol, 1,4-butanediol, 1,6-hexamethylenediol, 1,8-octamethylenediol, and 1,4-cyclohexanedimethanol and n is from 1 to 4 and m is from 1 to 6 with the proviso that m is never less than n.

20. A composition comprising a major proportion of an organic medium normally susceptible to oxidative degradation in which the organic medium is selected from the group consisting of oils of lubricant viscosity or greases prepared therefrom, said oils maybe hydrocracked oils, hydraulic oils, automative oils, gear oils, transmission fluids, waxes, liquid hydrocarbon fuels, fuel oils, and plastics and wherein said oils maybe mineral oils and fractions thereof or synthetic hydrocarbon base oils, and a minor amount sufficient to impart antioxidant properties and/or ultraviolet stabilization thereof of a

nickel organosulfur-containing hydroxy complex as described in claim 1.

4,198,304

COMPOSITIONS CONTAINING BETA SUBSTITUTED ACRYLIC ACID AMIDES AS PRESERVATIVES

Shigeo Inoue, Miyashiromachi; Norioki Miyamoto, Sakura, and Haruo Shimizu, Funabashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

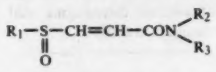
Filed Sep. 2, 1976, Ser. No. 719,731

Claims priority, application Japan, Sep. 11, 1975, 50/110374

Int. Cl.[2] **A61K** *31/10, 31/16;* **A61L** *13/00;* **C11D** *3/48;* **C10M** *3/32*

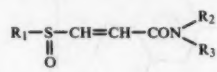
U.S. Cl. 252—47.5 **12 Claims**

1. The method for minimizing deterioration of a non-pharmaceutical composition containing organic materials that are subject to attack and destruction by micro-organisms, which comprises adding to and blending in said composition a compound or a mixture of compounds having the formula



wherein R_1 is alkyl containing one to 8 carbon atoms or alkenyl containing up to 8 carbon atoms, and R_2 and R_3, which can be the same or different, are alkyl containing one to 20 carbon atoms in an amount effective to prevent or retard multiplication of micro-organisms in said composition.

12. In a liquid detergent composition consisting essentially of an aqueous solution of a synthetic organic surfactant subject to attack by micro-organisms, and containing a preservative effective to prevent growth of micro-organisms responsible for deterioration of the composition, the improvement which comprises; said preservative is a compound or a mixture of compounds having the formula



wherein R_1 is alkyl containing one to 20 carbon atoms or alkenyl containing up to 20 carbon atoms, and R_2 and R_3, which can be the same or different, are alkyl containing one to 20 carbon atoms, and is present in an amount effective to prevent or retard multiplication of micro-organisms in said composition.

4,198,305

LUBRICANT COMPOSITIONS

Abraham O. M. Okorodudu, West Deptford,, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 14, 1978, Ser. No. 915,483

Int. Cl.[2] **C10M** *1/38*

U.S. Cl. 252—48.6 **7 Claims**

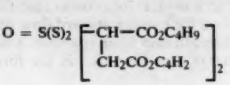
1. A compound having the following general formula:

$$[RO_2CCXY]S_n[CXYCO_2R']$$

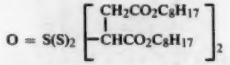
where n is 1 to 8 and in which one or more sulfur atoms in the chain are oxidized to sulfoxide (S=O) or sulfone

X and Y may be the same or different and are individually selected from H, alkyl, and cycloalkyl of from 1 to 10 carbon atoms and $—CH_2CO_2R''$; R, R' and R'' may be the same or different and are individually selected from alkyl, alkenyl, cycloalkyl, aralkyl, and alkaryl of from 1 to 32 carbon atoms.

2. The compound of claim 1 having the following formula:



3. The compound of claim 1 having the following formula:



4. A lubricant composition comprising a major amount of an oil of lubricating viscosity or grease prepared therefrom and a minor effective load-carrying amount of a compound having the following general formula:

$$[RO_2CCXY]S_n[CXYCO_2R']$$

where n is 1 to 8 and in which one or more sulfur atoms in the chain are oxidized to sulfoxide (S=O) or sulfone

X and Y may be the same or different and are individually selected from H, alkyl, and cycloalkyl of from 1 to 10 carbon atoms, and $—CH_2CO_2R''$ where R, R' and R'' may be the same or different and are individually selected from alkyl, alkenyl, cycloalkyl, aralkyl and alkaryl of from 1 to 32 carbon atoms.

4,198,306

DEPOSIT CONTROL AND DISPERSANT ADDITIVES

Robert A. Lewis, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 3, 1978, Ser. No. 921,400

Int. Cl.[2] **C10L** *1/22;* **C10M** *1/32;* **C07C** *101/18, 101/24*

U.S. Cl. 252—51.5 R **18 Claims**

1. Hydrocarbylpoly(oxyalkylene) aminoesters having a molecular weight from about 600 to about 5,000, suitable for use as deposit control additives and dispersants in hydrocarbonaceous fuels and lubricants, which are monoesters of a monocarboxylic C_2–C_{20} (amino-substituted) alkanoic acid and a hydrocarbylpoly(oxyalkylene) alcohol; wherein said amino-substituent contains about 1–12 amine nitrogen atoms and up to 40 carbon atoms and has a carbon:nitrogen ratio of up to about 10:1; said hydrocarbylpoly(oxyalkylene) moiety has a molecular weight from about 500 to about 5,000 and is composed of at least 5 oxyalkylene units of from 2 to 5 carbon atoms; and said hydrocarbyl group contains from 1 to 30 carbon atoms.

13. A fuel composition comprising a major amount of hydrocarbons boiling in the gasoline range and 30–2000 ppm of the aminoester of claim 1 in which at least sufficient number of said oxyalkylene units are branched-chain oxyalkylene units to render said ester soluble in said fuel composition.

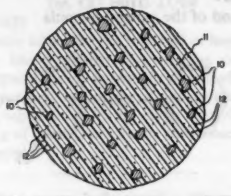
14. A lubricating composition comprising a major amount of an oil of lubricating viscosity and 0.01–10 weight percent of the aminoester of claim 1 in which at least a sufficient number of said oxyalkylene units are branched-chain oxyalkylene units to render said ester soluble in said lubricating oil composition, and said hydrocarbyl group contains from 1 to 30 carbon atoms.

4,198,307

POLYMER BASED MAGNETIC TAGS

Ami E. Berkowitz, and Fred F. Holub, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,383
Int. Cl.[2] C09K 3/00; C06B 45/04; H01F 1/00
U.S. Cl. 252—62.54 12 Claims



1. A magnetic tag for identification comprising:
a plurality of magnetic particles, collectively exhibiting at least one Curie temperature, said magnetic particles being disposed within a polymer matrix particle having a relatively smooth exterior surface.

4,198,308

MANUFACTURE OF FREE-FLOWING FABRIC SOFTENING DETERGENT

Giovanni Micciche, Aprilia, Italy, assignor to Colgate Palmolive Company, New York, N.Y.

Continuation of Ser. No. 830,781, Sep. 6, 1977, abandoned, which is a continuation of Ser. No. 658,802, Feb. 17, 1976, abandoned, which is a continuation of Ser. No. 381,896, Jul. 23, 1973, abandoned. This application Jul. 21, 7978, Ser. No. 928,630
Int. Cl.[2] C11D 3/065, 11/02
U.S. Cl. 252—135 8 Claims

1. A method of producing free flowing spray dried built heavy duty synthetic organic detergent compositions containing mixed mono- and diesters of phosphoric acid and higher alkoxy polyethoxy ethanol, in salt form, which function to soften fabrics consisting essentially of, by weight, (a) 0.1 to 5% $R^1O(CH_2CH_2O)_mPO(OM)_2$, (b) 0.1 to 3% $[R^1O(CH_2CH_2O)_m]_2POOM$, wherein R^1 is higher alkyl of 14 to 20 carbon atoms, m is from 1 to 6 and M is an alkali metal or ammonium, (c) 2 to 25% of a C_{10} to C_{18} alkali metal benzene sulfonate detergent and (d) 5 to 60% inorganic builder salt for such detergent which comprises admixing with such materials in an aqueous crutcher mix from which the composition is to be spray dried from 1 to 3% higher alkyl alcohol polyethoxyethanol wherein the alcohol is of 14 to 20 carbon atoms and the ethylene oxide:alcohol molar ratio is from 25:1 to 75:1, the ratio of the total quantities of (a) and (b) to said polyethoxyethanol being from 0.5:1 to 5:1.

4,198,309

USE OF TRANS, TRANS-Δ-DAMASCONE AND MIXTURES CONTAINING 80% OR MORE OF TRANS, TRANS-Δ-DAMASCONE IN AUGMENTING OR ENHANCING THE AROMA OF A DETERGENT

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown; Richard A. Wilson, Westfield; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Edward J. Granda, Englishtown; Joaquin Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and William L. Schreiber, Jackson, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 928,718, Jul. 27, 1978, which is a continuation-in-part of Ser. No. 851,727, Nov. 15, 1977. This application Mar. 23, 1979, Ser. No. 23,443
Int. Cl.[2] C11D 3/50, 9/44
U.S. Cl. 252—174.11 4 Claims

1. A process for augmenting or enhancing the aroma of a solid, liquid, anionic, cationic or nonionic detergent comprising the step of intimately admixing with a solid or liquid anionic, cationic or nonionic detergent base from 0.10% up to 0.20% by weight of said detergent base of either (i) a mixture containing from 80% up to 98% by weight of trans, trans-delta-damascone and from 2% up to 20% by weight of cis, trans-delta-damascone or (ii) substantially pure trans, trans-delta-damascone.

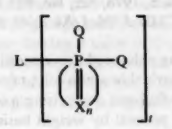
4,198,310

HIGH VOLTAGE INSULATING COMPOSITIONS CONTAINING ORGANIC POLYMERIZABLE PHOSPHORUS COMPOUNDS

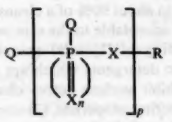
Bernard J. Lyons, Atherton, Calif.; Travers K. Cammack, II, Bartlesville, Okla., and David D. Nyberg, Sunnyvale, Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 13, 1978, Ser. No. 869,269
Int. Cl.[2] H01B 3/00
U.S. Cl. 252—63.2 30 Claims

1. A high voltage insulating composition comprising
(1) a polymer;
(2) an additive effective in reducing tracking tracking; and
(3) a phosphorus-containing compound which is selected from the group consisting of
(a) organic polymerisable compounds having a formula selected from

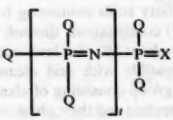


(I)



(II)

and



(III)

wherein
n is selected from 0 to 1;
t is an integer;
p is integer greater than 1;
X is independently selected from oxygen and sulphur;
L is a t-valent organic group which, when t is 1, is selected from groups of formula —R and —XR;
Q is independently selected from (i) monovalent groups of the formulae —R and —XR and (ii) divalent organic groups formed by two —R groups, two —XR groups or an —X group and an —R group attached to the same phosphorus atom, at least one of the Q groups being a group which renders said compound capable of polymerisation; and
R is independently selected from
(i) a hydrogen atom;
(ii) an aryl group;
(iii) a substituted aryl group;
(iv) a group which renders the compound capable of polymerisation, which contains carbon and hydrogen and in which any other atoms are selected from fluorine, chlorine, oxygen, sulphur, nitrogen, phosphorus and silicon;
(v) an alkyl group; and

(vi) an alkyl group substituted by at least one group, each of said substituents consisting of at least one atom selected from carbon, hydrogen, fluorine, chlorine, oxygen, sulphur, nitrogen, phosphorus and silicon;

(b) polymerisable salts of a compound in (a) containing a salt-forming acidic group, the cation in said salt being selected from ammonium and quaternary ammonium ions and metal ions wherein the metal is a metal having an atomic number less than 56 and belonging to one of Groups IA, IIA, IIB, IIIA, IIIB, IVA, IVB, VA, VB, VIA, VIIB, and VIII; and

(c) products derived from the reaction of at least one compound as defined in (a) and (b) in the presence of the polymer to form higher molecular weight products.

4,198,311

SKIN CONDITIONING TOILET BAR

James R. France, Overland Park; Fred Baiocchi, Prairie Village, both of Kans.; Lawrence J. Murphy, Kansas City, Mo., and John L. Van Haften, Overland Park, Kans., assignors to C. J. Patterson Company, Kansas City, Mo.

Filed Jul. 3, 1978, Ser. No. 921,779

Int. Cl.[2] **C11D** *1/04, 1/83, 3/46, 3/43*

U.S. Cl. 252—117 **6 Claims**

1. A toilet bar having enhanced skin conditioning properties by imparting to the user's skin a non-oily, talc-like, silky, very smooth, non-powdery feel and comprising a solid compressed form containing, on a percent by weight basis:

(a) from about 40% to about 90% of a cleansing agent which is physiologically acceptable to the skin and selected from the group consisting of (1) solid anionic and aliphatic nonionic synthetic detergents which are moldable into a solid bar and exhibit surface active characteristics and have required lathering properties, (2) soaps selected from the group consisting of alkali metal, ammonium and alkanolamine salts of fatty acids containing from 8 to 24 carbon atoms, and (3) combinations thereof;

(b) from about 1% to about 5% of at least one skin conditioning member compatible with said cleansing agent and selected from the group consisting of alkali metal isostearyl lactylate or glycolate and their physiologically acceptable amine salts; and

(c) from about 4% to about 25% water.

6. A method of imparting a non-oily, talc-like, silky, very smooth, non-powdery feel to a user's skin following cleansing with a toilet bar, said method comprising:

(I) applying to the skin an effective amount of a cleansing composition from a solid compressed toilet bar, said bar containing on a percent by weight basis:

(a) from about 40% to about 90% of a cleansing agent which is physiologically acceptable to the skin and selected from the group consisting of (1) solid anionic and aliphatic nonionic synthetic detergents which are moldable into a solid bar and exhibit surface active characteristics and have required lathering properties, (2) soaps selected from the group consisting of alkali metal, ammonium and alkanolamine salts of fatty acids containing from 8 to 24 carbon atoms, and (3) combinations thereof;

(b) from about 1% to about 5% of at least one skin conditioning agent and selected from the group consisting of alkali metal isostearyl lactylate or glycolate and their physiologically acceptable amine salts; and

(c) from about 4% to about 25% water; and

(II) subsequently rinsing the skin with water.

4,198,312

3'-CHLORO-4'-CYANOPHENYL 4-n-ALKYLBENZOATES

Hisato Sato, Tabata; Haruyoshi Takatsu, Kodaira, and Yutaka Fujita, Yokohama, all of Japan, assignors to Dainippon Ink. & Chemicals, Inc. and Hitachi, Ltd., both of Tokyo, Japan

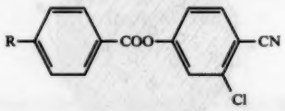
Filed Nov. 13, 1978, Ser. No. 959,441

Claims priority, application Japan, Nov. 18, 1977, 52-138480

Int. Cl.[2] **C07C** *121/60;* **C09K** *3/34;* **G02F** *1/13*

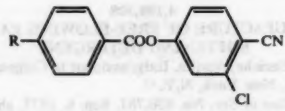
U.S. Cl. 252—299 **13 Claims**

1. A compound of the general formula



wherein R represents a linear alkyl group containing 1 to 9 carbon atoms.

11. A nematic liquid crystalline composition comprising (1) at least one nematic liquid crystal and (2) from 5 to 30 mole percent, based on the total weight of the nematic liquid crystal, of a compound of formula (I)



wherein R represents a linear alkyl group containing 1 to 9 carbon atoms,

said composition having a positive dielectric anisotropy suitable for use in a field effect mode liquid crystal display cell.

4,198,313

PROPELLANT COMPOSITIONS FOR AEROSOLS

Gianangelo Bargigia; Gerardo Caporiccio, and Giuliano Carniselli, all of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 787,260, Apr. 13, 1977, abandoned. This application Dec. 13, 1977, Ser. No. 860,084

Claims priority, application Italy, Apr. 16, 1976, 22380 A/76; Feb. 25, 1977, 20698 A/77

Int. Cl.[2] **C09K** *3/30;* **A61L** *9/04*

U.S. Cl. 252—305 **1 Claim**

1. Propellant compositions consisting of a mixture of

(a) from 20 to 40% by weight of one or more propelling hydrocarbon substances selected from the group consisting of propane, n-butane, isobutane, pentane and isopentane;

(b) from 10 to 25% by weight of a halogenated organic compound consisting of $CBrF_3$; and

(c) from 40 to 70% by weight of a fluorinated or chlorofluorinated propelling substance selected from the group consisting of $CH_3—CHF_2$, $CF_3—CH_2Cl$ and $CH_3—CClF_2$.

4,198,314
REMOVAL OF HEPARIN FROM HEPARIN-CONTAINING BLOOD PLASMA SAMPLES USING A TRIETHYLAMINOETHYL CELLULOSE TABLET

James R. Butler, Morris Plains; James E. Turner, and Frank W. Goodhart, both of Morristown, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 4, 1978, Ser. No. 931,032
Int. Cl.[2] B01D *15/04*
U.S. Cl. 252—427 3 Claims

1. A diagnostic tablet for the removal of heparin from heparin-containing blood plasma test samples comprising from about 5.4 to about 10 parts by weight of granular microcrystalline cellulose per part by weight of fibrous triethylaminoethyl cellulose, said tablet being formulated to provide from about 5 to about 26 mg of triethylaminoethyl cellulose per milliliter of plasma test sample.

4,198,315
HIGH EFFICIENCY CATALYST FOR POLYMERIZING OLEFINS

Donald F. Birkelbach, Angleton, and George W. Knight, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 5, 1978, Ser. No. 939,639
Int. Cl.[2] C08F *4/64*
U.S. Cl. 252—429 B 14 Claims

1. A catalytic reaction product of

(A) a tetravalent titanium compound represented by the formula $TiX_n(OR)_{4-n}$ wherein X is a halogen, R is an alkyl or an aryl group having from 1 to 12 carbon atoms and n has a value of 0 to 4, or a trivalent titanium complex represented by the formula $TiZ_3(L)_x$ wherein Z is halide, and L is an electron donating compound selected from water, alcohol, ether, ketone, amine or olefin, and x is a number from 1 to 6;

(B) an anhydrous divalent nickel compound represented by the formula $Ni(Q)_n$ wherein Q is an anion selected from halide, hydroxide, carboxylate, carbonate, nitrate, sulfate, or mixtures thereof and n is two divided by the valence of Q;

(C) an organomagnesium component selected from (1) an organomagnesium compound or (2) a complex of an organomagnesium compound and an organometallic compound in an amount sufficient to solubilize the organomagnesium compound in a hydrocarbon solvent, said organomagnesium compound and said complex being represented respectively by the following formulas MgR''_2 and $MgR''_2.xMR_1$ wherein each R'' is independently a hydrocarbyl group having from 1 to 20 carbon atoms, M is a metal selected from Al, Zn, Si, Sn, B and P, y is the number of hydrocarbyl groups and corresponds to the valencey of M and x is about 0.001 to 10 and

(D) a halide source selected from (1) an active non-metallic halide, said non-metallic halide corresponding to the formula R'X wherein R' is hydrogen or a hydrocarbyl such that the hydrocarbyl halide is at least as active as sec-butyl chloride and does not poison the catalyst and X is halogen or (2) a metallic halide corresponding to the formula $MR_{y-a}X_a$ wherein M is a metal of Group 1B, 3A or 4A of Mendeleev's Periodic Table of Elements, R is a monovalent hydrocarbyl radical, X is halogen, y is a number corresponding to the valence of M and a is a number of 1 to y; provided that the proportions of the foregoing components of said catalytic reaction product being such that the atomic ratio of Mg:Ti is from about 1:1 to about 2000:1, the atomic ratio of Al:Ti is from about 0.1:1 to about 2000:1, the atomic ratio of Ni:Ti is from about 0.01:1 to about 500:1, the atomic ratio of excess X:Al is from about 0.0005:1 to about 10:1; and further provided that when the organomagnesium component and/or the halide source provides insufficient quantities of aluminum, there is also present an aluminum compound represented by the formula $AlRy'Xy''$ wherein R and X are as defined above and y' and y'' each have a value of from zero to three with the sum of y' and y'' being three.

4,198,316
FOAMING COMPOSITION FOR TEXTILE FINISHING AND COATINGS

Roop C. Nahta, Charlotte, N.C., assignor to GAF Corporation, New York, N.Y.

Filed Apr. 18, 1978, Ser. No. 897,378
Int. Cl.[2] B01F *17/10, 17/18*
U.S. Cl. 252—354 11 Claims

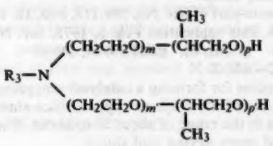
1. An expansion mixture for foaming resin, latex and plastic coatings which comprises a foamable mixture of:

(a) 15 to 53 weight% of a compound having the formulae:

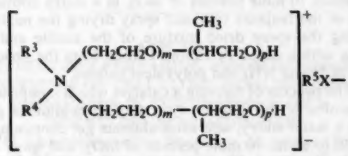
$$R—(OCH_2CH_2)_nOSO_3H^-M^+ \text{ and/or}$$
$$R^1—(CH_2CH_2O)_{n+1}SO_3H^-M^+$$

wherein R is alkyl of 6 to 18 carbon atoms or hydroxyalkyl of 6 to 18 carbon atoms; R^1 is hydrogen, alkyl of 6 to 18 carbon atoms or phenoxy substituted with not more than two alkyl groups each having 1 to 33 carbon atoms; n is an integer having a value of 0 to 10; and M is sodium, potassium, calcium, ammonium or an alkyl- or alkyloxyamine radical of 1 to 6 carbon atoms;

(b) 5 to 42 weight % of a compound having the formulae:

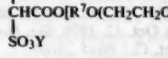


and/or



wherein R^3 is alkyl of 6 to 20 carbon atoms; R^4 and R^5 are independently alkyl of 1 to 4 carbon atoms; X is sulfate, halide or phosphate; m and m' are integers independently having a value of 4 to 30; and p and p' are integers independently having a value of 0 to 20; and

(c) 5 to 45 weight % of a compound having the formula:



wherein R^6 and R^7 are independently alkylene of 4 to 22 carbon atoms; r and r' are independently integers each having a value of 0 to 15; w and w' are integers independently having a value of 0 or 1; and y is sodium or potassium.

4,198,317

PASSIVATION OF METALS WHICH CONTAMINATE CRACKING CATALYSTS WITH ANTIMONY TRIS (HYDROCARBYL SULFONATE)

Brent J. Bertus; Dwight L. McKay, and Harold W. Mark, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 25, 1978, Ser. No. 926,698

Int. Cl.[2] C10G *9/16, 11/06;* **C07F** *9/90;* **B01J** *23/18*

U.S. Cl. 252—411 R **16 Claims**

1. A method for passivating a contaminating metal on a hydrocarbon cracking catalyst which comprises adding to said catalyst, an antimony tris (hydrocarbyl sulfonate).

4,198,318

PRODUCTION OF HIGH STRENGTH ALUMINA SPHERES BY HYDROGELLING CORRESPONDING SLURRIES

Donald E. Stowell, Oklahoma City; R. Tom Jackson, and Larry L. Bendig, both of Ponca City, all of Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Nov. 24, 1978, Ser. No. 963,594

Int. Cl.[2] B01J *21/04, 35/08;* **C01F** *7/02*

U.S. Cl. 252—448 **9 Claims**

1. A method for producing alumina having high crush strength and substantially spherical shape comprising dropping low viscosity acidified alumina slurry directly into an ammonia solution containing surfactant.

4,198,319

METHOD OF PRODUCING ZEOLITIC CATALYSTS WITH SILICA ALUMINA MATRIX

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 769,118, Feb. 16, 1977, Pat. No. 4,142,995. This application Feb. 3, 1978, Ser. No. 874,755

Int. Cl.[2] B01J *29/04, 29/08*

U.S. Cl. 252—455 Z **14 Claims**

1. In a process for forming a catalyst comprising mixing in a slurry a zeolite of the faujasite type, a silica-alumina gel containing silica in the range of about 50 to about 70 mole percent, and clay and spray drying said slurry.

8. The process which comprises forming a mixture of a silica-alumina gel, said silica-alumina gel containing from about 50 to about 70 mole percent of SiO_2, in a slurry containing a zeolite of the faujasite type and spray drying the mixture exchanging the spray dried mixture of the zeolite and silica-alumina with a cation or cations chosen from the group consisting of H and NH_4 and polyvalent cations.

12. The process of forming a catalyst which comprises mixing a zeolite of the faujasite type with silica-alumina gel and clay in a water slurry, said silica-alumina gel containing from about 50 to about 70 mole percent of SiO_2, and spray drying said slurry to form microspheres and exchanging said microspheres with a cation or cations chosen from the group of H, NH_4 and polyvalent cations.

4,198,320

CRACKING CATALYST WITH IMPROVED RESISTANCE TO POISONING BY METALS

Arthur W. Chester, Cherry Hill, and William A. Stover, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 769,244, Feb. 16, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,635

Int. Cl.[2] B01J *29/06*

U.S. Cl. 252—455 Z **12 Claims**

1. In the preparation of an inorganic oxide gel-containing cracking catalyst for converting hydrocarbons, the improvement which comprises incorporating into the catalyst subsequent to gel formation a colloidal dispersion of an oxide selected from silica, alumina or silica-alumina to deposit between about 0.1 and about 50 weight percent of said oxide therein, said colloidal dispersion having a particle size of from 10 to 10,000 A and where said cracking catalyst has a crystalline aluminosilicate zeolite in finely divided form contained in and distributed throughout the inorganic gel matrix whereby the resulting catalyst composite is characterized by (1) a resistance to metal poisoning and (2) a reduction in contaminant hydrogen and coke yields greater than that of corresponding catalysts which have not undergone treatment with said colloidal dispersion.

4,198,321

HYDROPROCESSING CATALYSTS

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 808,268, Jun. 20, 1977, Pat. No. 4,164,483, which is a continuation-in-part of Ser. No. 718,166, Aug. 27, 1976, Pat. No. 4,085,069, which is a continuation-in-part of Ser. No. 718,167, Aug. 27, 1976, Pat. No. 4,058,484. This application Dec. 5, 1977, Ser. No. 857,394

Int. Cl.[2] B01J *29/04, 29/08*

U.S. Cl. 252—455 Z **10 Claims**

1. A method of producing a cracking catalyst containing a zeolite of the faujasite type which comprises mixing a zeolite of the faujasite type whose exchange position is substantially entirely occupied by Na cations with a solution of an ammonium salt, the quantity of the zeolite, and the concentration of the ammonium cations, being in quantity sufficient to establish a ratio of the equivalents of NH_4 cation in the solution, per equivalent of Na cation in the zeolite in the mixture in excess of about 5, heating the solution at superatmospheric pressure to a temperature above about 300 and less than about 450° F. for a period of time to reduce the sodium content of the zeolite, expressed as Na_2O, in the range of from about 1% to about 0.5% by weight of the exchanged zeolite, on a volatile free basis, and washing the zeolite with water until the wash water is substantially free of anions of the ammonium salt in solution, mixing said exchanged zeolite with a water solution of a hydrogenating metal compound and separating water from the zeolite.

5. A cracking catalyst produced by the process which comprises mixing a zeolite of the Y type whose exchange position is substantially entirely occupied by Na cations with a solution of an ammonium salt, the quantity of the zeolite, and the concentration of the ammonium cations, being in quantity sufficient to establish a ratio of the equivalents of NH_4 cation in the solution, per equivalent of Na cation in the zeolite in the mixture in excess of about 5, heating the solution at superatmospheric pressure to a temperature above about 300° F. and less than about 450° F. for a period of time to reduce the sodium content of the zeolite, expressed as Na_2O, to the range of less than 1% by weight of the exchanged zeolite, on a volatile free basis, and washing the zeolite substantially free of anions of the salt in solution, mixing said zeolite with a matrix and water and forming said mixture into a pellet and mixing said pellet with a water solution of a hydrogenating metal compound and separating water from said pellet.

4,198,322

ONE-STEP CURING METHOD FOR MANUFACTURE OF NEUTRON ABSORBING PLATES

Roger S. Storm, Williamsville, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Dec. 1, 1977, Ser. No. 856,378

Int. Cl.[2] C04B *35/68*

U.S. Cl. 252—478 **4 Claims**

1. A one-step curing method for the manufacture of neutron absorbing articles which comprises irreversibly curing, in desired article form, a mixture of boron carbide particles, curable phenolic resin in liquid state and curable phenolic resin in solid state and in particulate form, the curable phenolic resin

in liquid state being of a molecular weight in the range of 200 to 1,000, of a resin content of 50 to 90%, by weight, and of a solvent content of 5 to 30%, by weight, and the curable phenolic resin in the solid state being one of a molecular weight in the range of 1,200 to 10,000 and of a solvent content up to 3%, the proportion of curable phenolic resin in liquid state to curable phenolic resin in solid state being in the range of 1:0.5 to 1:4 by weight and the neutron absorbing article resulting being about 60 to 80% of boron carbide particles and 20 to 40% of irreversibly cured phenolic polymer, by weight.

4,198,323

2,2,5-TRIMETHYL-5-PHENYL-1,3-DIOXANE AND PERFUME COMPOSITIONS CONTAINING IT

Jens Conrad, Hilden; Ulf-Armin Schaper, Dusseldorf, and Klaus Bruns, Krefeld-Traar, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Jul. 12, 1978, Ser. No. 923,794

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734295

Int. Cl.[2] C11B 9/00; A61K 7/46

U.S. Cl. 252—522 R **3 Claims**

1. 2,2,5-Trimethyl-5-phenyl-1,3-dioxane.

4,198,324

COMPOSITION AND METHOD OF IMPROVING THE GREEN STRENGTH OF UNVULCANIZED ELASTOMERS

Joginder Lal, Akron, and Sandra J. Walters, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

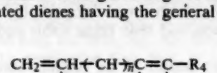
Filed Mar. 21, 1977, Ser. No. 779,382

Int. Cl.[2] C08L 9/00, 7/00

U.S. Cl. 260—4 R **10 Claims**

1. A prevulcanization process for producing elastomer blends, comprising, improving the prevulcanization green strength of an elastomer blend by

mixing a semi-crystalline butene polymer having a number average molecular weight of from about 30,000 to about 500,00 with an elastomer to produce said elastomer blend, the amount of said butene polymer ranging from about 2 parts to about 25 parts per 100 parts of said elastomer, said butene polymer selected from the class consisting of polybutene and interpolymers made from 1-butene monomer and at least one monomer selected from the class consisting of alpha-olefins having 2 through 16 carbon atoms and nonconjugated dienes having the general formula:



where R_1, R_2, and R_3 is a hydrogen, a lower alkyl group containing from 1 to 4 carbon atoms, or an aryl group; where R_4 is an aryl group or a lower alkyl group containing from 1 to 9 carbon atoms, and n is an integer having a value of from 1 to 6, and wherein the said R_1's in the

group may be similar to dissimilar; and non-conjugated alpha, omega-polyenes having from 6 to 36 carbon atoms which may or may not contain internal unsaturation, wherein butene in said interpolymers comprises from 99.9 to 65 mole percent of the total monomers,

said elastomer selected from the class consisting of natural cis-1,4-polyisoprene and elastomers made from monomers selected from the class consisting of conjugated dienes having from 4 to 10 carbon atoms, interpolymers of said dienes among themselves or with monomers selected from the class consisting of vinyl substituted aromatic hydrocarbon compounds having from 8 to 12 carbon atoms, and polyalkenylenes.

4,198,325

SHAPED ARTICLE COMPRISING A PERMANENTLY PLASTICIZED CELLULOSE COMPOSITION AND PREPARATION THEREOF

Klaus-Dieter Hammer, Mainz, and Günter Gerigk, Oberursel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 856,033

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1976, 2654417

Int. Cl.[2] C08L 1/02

U.S. Cl. 260—17.3 **50 Claims**

1. A shaped article comprising a plasticized chemically-modified cellulose composition of high mechanical strength which comprises:

(a) a plasticized cellulose composition containing a plasticity-enhancing amount of at least one plasticizing alkyl derivative containing at least one alkyl group containing from about 8 to about 24 carbon atoms, said plasticizing alkyl derivative being selected from the group consisting of

(i) a substantially water insoluble ester of an aliphatic monocarboxylic acid containing from about 9 to about 25 carbon atoms with a polyalcohol comprising at least two hydroxy groups at least one of which is esterified with said aliphatic monocarboxylic acid, and

(ii) a combination of said ester with an alkylamido-bis-dimethylene-triazinone-tetramethylol or an alkylamino-bis-dimethylene-triazinone-tetramethylol;

(b) incorporated in said cellulose composition at least one synthetic polymer containing recurring oxyalkylene groups and at least one terminal N-methylol carbamate group having the formula

$$—CH_2—O—CO—NH—CH_2—OH;$$

and

(c) water.

4,198,326

METHOD FOR PREPARING MODIFIED GRAFT COPOLYMERS OF CELLULOSE WITH MONOVINYL MONOMERS IN THE PRESENCE OF A DIVINYLBENZENE MODIFIER

Marina O. Lishevskaya, ulitsa Novatorov, 40, korpus 11, kv. 46; Boris P. Morin, ulitsa Novatorov, 40, korpus 19, kv. 13; Galina I. Stanchenko, ulitsa Krasnaya Presnya, 9, kv. 117; Tatyana A. Vanjushkina, Krivokolenny pereulok, 10, kv. 10, and Zakhar A. Rogovin, Donskaya ulitsa, 24, kv. 68, all of Moscow, U.S.S.R.

Filed Oct. 23, 1978, Ser. No. 953,341

Claims priority, application U.S.S.R., Feb. 14, 1978, 258170[1]

Int. Cl.[2] C08L 1/02

U.S. Cl. 260—17.4 GC **7 Claims**

1. A method for preparing fibrous modified graft copolymers of cellulose with monomers selected from the group consisting of monovinyl monomers containing ionic groups and monovinyl monomers containing non-ionic groups capable of being converted to ionic groups, comprising a free-radical graft-polymerization of said monovinyl monomers onto cellulose in the presence of a free-radical initiator, and modification of the resulting graft copolymers of cellulose with said monovinyl monomers; said method being conducted in the presence of divinylbenzene as the modifying agent in an amount ranging from 1 to 5 mol.% of the monovinyl monomer.

4,198,327

GRAFTED POLYOLEFIN COMPOSITION HAVING IMPROVED ADHESIVENESS

Hisashi Matsumoto, Iwakuni, and Hiroji Niimi, Waki, both of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Dec. 22, 1976, Ser. No. 753,412

Claims priority, application Japan, Dec. 27, 1975, 50-155864

Int. Cl.[2] C08C *4/00;* **C08L** *7/00, 23/26*

U.S. Cl. 260—4 **3 Claims**

1. A composition having improved adhesion to polar solid materials which consists essentially of

(A) 97 to 80 parts by weight based on the total weight of the resin composition of a modified crystalline polyolefin having grafted thereto a monomer selected from the group consisting of unsaturated aliphatic carboxylic acids selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid and citraconic acid, or its anhydride, ester, amide, imide or metal salt, said crystalline polyolefin having a degree of crystallinity measured by an X-ray analysis, of at least 25%, and containing the grafting monomer in an amount of 0.0001 to 3% by weight based on the total amount of the crystalline polyolefin and the grafting monomer; and

(B) 3 to 20 parts by weight of a hydrocarbon elastomer selected from the group consisting of natural rubber, polyisobutylene, ethylene/propylene rubber, ethylene/1-butene rubber, butyl rubber, styrene butadiene rubber, ethylene/butadiene rubber, or isoprene rubber.

4,198,328

FLAME-RESISTING INTUMESCENT PAINTS

Guido Bertelli; Pierpaolo Roma, and Renato Locatelli, all of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Oct. 6, 1978, Ser. No. 949,126

Claims priority, application Italy, Oct. 10, 1977, 28413 A/77

Int. Cl.[2] C09D *3/48, 3/66, 5/18*

U.S. Cl. 260—22 A **7 Claims**

1. Intumescent paints endowed with flame-resistance properties, having as essential constituents a polymeric base for paints, a diluent, a source of phosphoric acid, a source of carbon and an intumescing agent, characterized in that said paints contain as a carbon source and intumescing agent a single, water-insoluble, nitrogen containing product chosen from among (a) reaction products of an aldehyde with compounds containing two —NR— groups or a —NR— group and a —CO— and/or —CS— group inserted in a cyclic structure (wherein R=H or hydroxyalkyl having 1–4 carbon atoms) and (b) reaction products from aliphatic or aromatic diisocyanates or triisocyanates with organic compounds having in the molecule reactive hydrogen atoms.

4,198,329

PROCESS FOR THE PREPARATION OF REACTION PRODUCTS OF NATURAL RESINIC ACIDS AND FORMALDEHYDE

Albert Rudolphy, Wiesbaden, and Wolfgang Dathe, Wiesbaden-Auringen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,345

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1977, 2755825

Int. Cl.[2] C08L *93/00*

U.S. Cl. 260—24 **10 Claims**

1. Process for the manufacture of resinous products which comprises

(a) reacting in a first step, at least one natural resinic acid with 7.5 to 12% by weight, referred to the weight of the natural resinic acids, of a formaldehyde at a superatmospheric pressure and at a temperature of from 100° to 200° C.,

(b) in a second stage, increasing the temperature to at least 200° C., but by at least 20° C., and continuing the reaction at atmospheric pressure to yield a partial esterified product having an acid number of 115 to 135,

(c) reacting the reaction product obtained from (b) at a temperature of at least 200° C. with an amount of an alkaline-reacting calcium compound sufficient to yield a partial calcium salt having a calcium content of from 3.5 to 4% by weight, referred to the weight of the reaction product;

(d) neutralizing any residual calcium compound by the addition of from 10 to 50% by weight, relative to the weight of the calcium compound added, of a saturated monocarboxylic acid having from 1 to 6 carbon atoms, at a temperature of at least 200° C. and simultaneously completing the salt formation by reaction to yield a reaction product having an acid number of from 20 to 40, the product

(e_1) then being isolated or

(e_2) being admixed with up to 5% by weight of natural resinic acids after at least one of stages (b) to (d).

4,198,330

POLYURETHANE LATICES MODIFIED BY A VINYL POLYMER

Samuel Kaizerman, and Romeo R. Aloia, both of Somerville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 462,489, April 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 349,336, Apr. 9, 1973, abandoned.

This application Nov. 12, 1975, Ser. No. 631,358

Int. Cl.[2] C08L *75/00*

U.S. Cl. 260—29.6 R **14 Claims**

1. A composition of matter comprising a polyurethane latex and a polymer of at least one vinyl monomer, said composition prepared by free radical polymerization of said monomer in the presence of said latex, said monomer being characterized as capable of providing polymers having a glass transition temperature greater than about 60° C.

4,198,331

RESINOUS COATING COMPOSITIONS CURABLE BY MICHAEL ADDUCT EXCHANGE

Stephen L. Buchwalter, Allison Park; Robert D. Jerabek, Glenshaw, both of Pa.; Lee-Pei H. Chou, Hudson, Ohio, and Roger M. Christenson, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 28, 1978, Ser. No. 937,368

Int. Cl.[2] C08L *63/10, 77/06, 79/00*

U.S. Cl. 260—29.2 EP **13 Claims**

1. A curable resinous composition comprising:

(A) a polyamine resin containing primary and/or secondary amino groups, said resin being stable under curing conditions; and

(B) a Michael adduct of an organic material containing alpha, beta-ethylenically unsaturated moieties in conjugation with carbonyl moieties reacted with primary and/or secondary amines, said Michael adduct being unstable under curing conditions;

said resinous composition being depositable on a substrate to form a film thereon which is curable at elevated temperatures.

4,198,332

PROCESS FOR THE PREPARATION OF SOLUTIONS OF UREA-FORMALDEHYDE RESINS FOR THE IMPREGNATION AND COATING OF CARRIER WEBS FOR COATING THE SURFACE OF WOOD-BASED PANELS

Arnold Laqua; Ulrich Holtschmidt; Eckehard Schamberg, all of Essen, and Dieter Hellwig, Bochum, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Oct. 6, 1978, Ser. No. 949,113

Int. Cl.[2] C08L *61/24;* **B32B** *23/08, 27/10*

U.S. Cl. 260—29.4 UA **6 Claims**

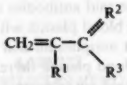
1. A process for the preparation of solutions of hardenable urea-formaldehyde resins for impregnating and coating carrier

webs for coating the surface of wood-based panels, in which an aqueous solution of:

(a) urea and formaldehyde, in a molar ratio of 1:1.5 to 2.5 and in the presence of 0.2 to 1.0 mmoles of an amino-sulfonic acid and 20 to 100 mmoles of ammonia or 5 to 25 mmoles of urotropine, all amounts being based on 1 mole of urea, are reacted for 10 to 30 minutes at temperatures of 70° to 95° C. until the 50% solution has a viscosity of 55 to 65 cps at 20° C.; and then

(b) adding 0.8 to 10 mmoles of an aminosulfonic acid and maintaining the pH at a value between 4.0 and 4.5 with ammonia during a reaction time of 10 to 25 minutes at 70° to 95° C. until the 50% solution has a viscosity of 80 to 110 cps at 20° C., and finally;

(c) adding 40 to 200 mmoles of ammonia or 10 to 50 mmoles of urotropine and 0.1 to 0.3 moles of urea to the reaction product from step (b) and heating the reaction mixture at a temperature of 70° to 95° C. for 5 to 45 minutes until the 50% solution has a viscosity of 85 to 125 cps at 20° C.; and wherein 1 to 10 weight percent, based on the solid resin, of a polymer are added in the form of an emulsion or suspension to the reaction mixture in step (a), the polymer being formed from monomers of the formula



in which

R^1=H or CH_3,

R^2=O,

R^3=OH, NH_2, OC_nH_{2n+1} wherein n is a whole number from 1 to 4, $OC_mH_{2m}OH$ wherein m is a whole number from 1 to 6, $OC_mOC_nH_{2n+1}$, or

R^2 and R^3 are both N.

4,198,333

STABLE SUSPENSIONS OF INORGANIC FILLERS IN ORGANIC POLYHYDROXYL COMPOUNDS CONTAINING COMPLETELY OR PARTIALLY NEUTRALIZED CARBOXYL GROUPS

Wulf von Bonin, Leverkusen, and Peter Vehlewald, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 24, 1978, Ser. No. 936,673

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739620

Int. Cl.² C08L *33/02*

U.S. Cl. 260—33.2 R **24 Claims**

1. A suspension which is stable in storage comprising:

(1) 0.5 to 80%, by weight, based on the total suspension, of an inorganic filler in

(2) 20 to 99.5%, by weight, based on the total suspension, of polyhydroxyl compounds containing aliphatic or cycloaliphatic combined hydroxyl groups,

wherein said polyhydroxyl compounds (2) contain from 0.05 to 10% by weight based on (1)+(2) of a graft polymer and stabilizer which was produced by the free-radical polymerization of

(a) from 1 to 35%, by weight, based on the graft polymer, of an olefinically unsaturated carboxylic acid and

(b) from 0 to 60%, by weight, based on the graft polymer, of other olefinically unsaturated monomers, in the presence of

(c) from 5 to 99%, by weight, based on the graft polymer, of polyhydroxyl compounds, the improvement

wherein the carboxyl groups of the graft polymer are completely or partially neutralized by organic or inorganic bases.

4,198,334

SUBSTITUTED MALONIC ACID DERIVATIVES AND THEIR USE AS STABILIZERS

Michael Rasberger, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

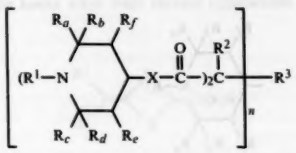
Continuation-in-part of Ser. No. 738,992, Nov. 4, 1976, abandoned. This application Dec. 15, 1977, Ser. No. 861,090

Claims priority, application Switzerland, Nov. 7, 1975, 14432/75; Nov. 7, 1975, 14433/75; Apr. 2, 1976, 4146/76; Apr. 2, 1976, 4147/76; Sep. 3, 1976, 11214/76

Int. Cl.² C07D *401/12*; C08K *5/34*

U.S. Cl. 260—45.8 N **21 Claims**

1. A member selected from the group consisting of a compound of the formula (I)



(I)

and an acid addition salt thereof, wherein

n is 1 or 2,

R_a represents alkyl having 1–6 carbon atoms,

R_b represents alkyl having 1–6 carbon atoms,

R_c represents alkyl having 1–9 carbon atoms, phenyl, benzyl or phenylethyl,

R_d represents alkyl having 1–6 carbon atoms, or

R_c and R_d together represent tetra- or pentamethylene,

R_e represents hydrogen, alkyl having 1–5 carbon atoms, alkenyl having 3–4 carbon atoms, alkynyl having 3–4 carbon atoms or aralkyl having 7–8 carbon atoms,

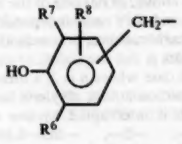
R_f represents hydrogen, alkyl having 1–5 carbon atoms, alkenyl having 3–4 carbon atoms, alkynyl having 3–4 carbon atoms, or aralkyl having 7–8 carbon atoms, with R_e and R_f being mutually exchangeable, and

X represents oxygen or —NR—,

R represents hydrogen, alkyl having 1–18 carbon atoms, alkenyl having 3–4 carbon atoms, alkynyl having 3–4 carbon atoms, cycloalkyl having 5–12 carbon atoms, aryl having 6–10 carbon atoms, or aralkyl having 7–9 carbon atoms,

R^1 represents hydrogen, —O·, —OH, alkyl having 1–12 carbon atoms, alkenyl having 3 or 4 carbon atoms, propargyl, benzyl or a group of the formula $—CH_2—CH(OR^5)—R^4$ wherein R^4 represents hydrogen, methyl or phenyl, and R^5 represents hydrogen or a group A—CO—, or R^1 represents a group A—CO—, and in both cases A represents alkyl having 1–12 carbon atoms, alkenyl having 2 or 3 carbon atoms, cyclohexyl, phenyl, benzyl, a phenyl or phenylethyl group substituted by 2 alkyl groups each having 1–4 carbon atoms and a hydroxyl group, alkylamino having 1–12 carbon atoms, dialkylamino having 2–16 carbon atoms, anilino, alkoxy having 1–12 carbon atoms, benzyloxy or phenoxy,

R^2 represents a hydroxybenzyl group of the formula II



(II)

wherein R^6 and R^7 each independently represent an alkyl group having 1–9 carbon atoms, aralkyl having 7–9 carbon atoms or cycloalkyl having 5–8 carbon atoms, and R^8 represents hydrogen or methyl, and

R^3 represents, in the case where n is 1, alkyl having 1–20 carbon atoms, or alkyl having 1–10 carbon atoms, which is substituted by at least one of the groups $—OR^9$, $—SR^{10}$, $—CO\text{-}R^{11}$, —CN, $—C(O)—YR^{12}$, $—O—C(O)R^{13}$ or $—P(O)(OR^{14})_2$, wherein

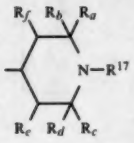
R^9 denotes phenyl or alkylphenyl having 7–10 carbon atoms, benzyl or cyclohexyl,

R^{10} represents phenyl or alkylphenyl having 7–10 carbon atoms,

R^{11} denotes alkyl having 1–12 carbon atoms,

Y denotes oxygen or —NR—, and R has the above-given meaning,

R^{12} denotes alkyl having 1–18 carbon atoms, cycloalkyl having 5–12 carbon atoms, or a group of the formula III



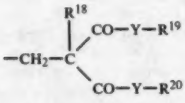
(III)

wherein R^{17} has one of the meanings given for R^1

R^{13} denotes alkyl having 1–17 carbon atoms, cycloalkyl having 5–12 carbon atoms, or phenyl or phenylalkyl having 7–9 carbon atoms, wherein the phenyl radical is unsubstituted or substituted by at least one of the groups alkyl having 1–4 carbon atoms and hydroxyl, and

R^{14} denotes alkyl having 1–8 carbon atoms, allyl or phenyl, and X has the above-defined meaning, and

R^3 further represents an alkyl group having 2–22 carbon atoms, which is interrupted by —O—, —S—, —SO— or $—SO_2—$, alkenyl having 3–18 carbon atoms, alkynyl having 3–8 carbon atoms, cycloalkyl having 5–12 carbon atoms, alkyl-cycloalkyl having 6–18 carbon atoms, cycloalkyl-alkyl having 6–14 carbon atoms, aralkyl or alkyl-aralkyl having 7–19 carbon atoms, phenyl, or a group $—OR^{15}$, wherein R^{15} is alkyl having 1–18 carbon atoms, alkenyl having 3–4 carbon atoms, alkynyl having 3–4 carbon atoms, cycloalkyl having 5–12 carbon atoms or aralkyl having 7–9 carbon atoms, or R^3 represents a group $—O—C(O)R^{16}$ or $—NH—C(O)R^{16}$, wherein R^{16} is alkyl having 1–12 carbon atoms, alkenyl having 2 or 3 carbon atoms, cyclohexyl, phenyl, benzyl, a phenyl or phenyl-ethyl group substituted by 2 alkyl groups each having 1–4 carbon atoms and a hydroxyl group, or R^3 is a group of the formula III or of the formula IV



(IV)

wherein R^{18} represents alkyl having 1–20 carbon atoms, allyl, benzyl, phenyl, cyclohexyl, alkoxyalkyl- having 3–8 carbon atoms, or a group $—O—C(O)R^{16}$ or $—NH—C(O)R^{16}$ as defined above, or has one of the meanings given for R^2, and R^{19} and R^{20} each independently represent alkyl having 1–6 carbon atoms, or a radical of the formula III, and, in addition,

R^3 represents, in the case where n is 2, a direct bond, alkylene having 1–20 carbon atoms, alkylene having 2–20 carbon atoms, which is interrupted by one or two of the members —O—, —S—, —SO—, $—SO_2—$ or —CO—O—, arylene-bis-alkylene having 8–14 carbon atoms, alkenylene having 4–8 carbon atoms, or alkynylene having 4–8 carbon atoms.

14. A plastics material stabilized against damage caused by the action of oxygen, heat and light, which plastics material contains as stabilizer 0.01 to 5 percent by weight of a compound or salt thereof according to claim **1**.

4,198,335

ANTIPLASMIN AND ANTISERUM

Désiré J. Collen, Winksele, Belgium, assignor to Leuven Research & Development V.Z.W., Leuven, Belgium

Filed Mar. 8, 1977, Ser. No. 775,462

Claims priority, application Netherlands, Mar. 18, 1976, 7602846

Int. Cl.[2] **A23J** *1/06;* **A61K** *37/02, 39/00*

U.S. Cl. 260—112 B **8 Claims**

1. A method of preparing antiplasmin comprising the steps of:

(a) generating an antiserum against plasmin-anti-plasmin complex, said antiserum containing a plurality of antibodies including antibodies against antiplasmin;

(b) purifying the generated antiserum and recovering the said antibodies against antiplasmin;

(c) insolubilizing the said antibodies against antiplasmin;

(d) contacting fresh blood plasma with the said insolubilized antibodies against antiplasmin and adsorbing antiplasmin from said fresh blood plasma thereupon; and

(e) recovering the said antiplasmin from the said insolubilized antibodies upon which it is adsorbed.

4,198,336

CHEMICAL PROCESS FOR PREPARING ANDROSTA-4-ENE 17α-CARBOXYLIC ACIDS

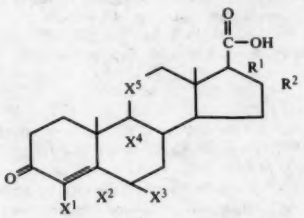
Francisco S. Alvarez, Sunnyvale, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 5, 1978, Ser. No. 893,642

Int. Cl.[2] **C07J** *1/00*

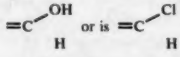
U.S. Cl. 260—239.55 D **14 Claims**

1. A process for preparing etienic acids of the formula:

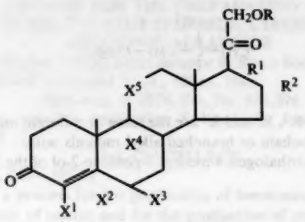


(II),

wherein X^1 X^2 and X^3 are each independently hydrogen, or fluoro; X^4 is hydrogen, fluoro or chloro; X^5 is



when X^4 is chloro; R^1 is α-hydroxy when R^2 is α-methyl or R^1 and R^2 together are 16α,17α-isopropylidenedioxy; and the broken and solid lines between C-1 and C-2 represent a single or double bond, which comprises reacting a compound represented by the formula:



(I)

wherein

R is hydrogen or lower alkanoyl of 2–6 carbons or benzoyl and X^1, X^2, X^3, X^4, X^5, R^1 and R^2 are as described hereinbefore, with an alkali metal carbonate base in a lower alkanol in the presence of oxygen to form the corresponding compounds of formula II wherein X^1, X^2, X^3, X^4, X^5, R^1 and R^2 are as previously defined.

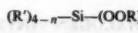
4,198,337

T-OCTYL SILICON PEROXIDES

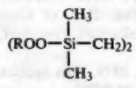
Lawrence A. Bock, Walnut Creek, and Reidar Halle, Novato, both of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,290
Int. Cl.[2] C07F 7/08
U.S. Cl. 556—406 **24 Claims**

1. A silicon peroxide selected from the formulas:



(a)



(b)

wherein n is an integer of 1–3; R is a t-octyl group in which a tertiary carbon atom is directly bonded to the peroxy group; and R′ is selected from alkyl, phenyl, and alkenyl (provided n is not more than 2), and a carbon chain which forms a saturated heterocyclic ring with the silicon atom, each R′ group having up to about 10 carbon atoms.

4,198,338

PROCESS FOR PURIFYING THIENAMYCIN

Laszlo R. Treiber, Gillette, and Vincent P. Gullo, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 13, 1978, Ser. No. 885,836
Int. Cl.[2] C07D 489/04; A61K 31/40
U.S. Cl. 260—326.31 **2 Claims**

1. In the process for recovering the antibiotic thienamycin from fermentation broths or from solutions containing said antibiotic by purification through column chromatography, the improvement comprising passing the broth or solution, cold, at a pH of from about 6.95 to about 8, through an anion exchange resin of the cross-linked polystyrene-triethylammonium type in the HCO_3^- cycle, followed by elution with a cold aqueous solution of CO_2.

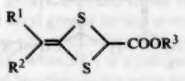
4,198,339

1,3-DITHIETANE-2-CARBOXYLIC ACIDS AND THE PREPARATION THEREOF

Masaru Iwanami, Yokohama; Tetsuya Maeda, Urawa; Yoshinobu Nagano, Niiza; Masaharu Fujimoto, Tokyo; Noriaki Nagano, Ageo; Atsuki Yamazaki, Ichikawa; Kazaharu Tamazawa, Saitama; Kiyoshi Murase, Urawa, and Tadao Shibanuma, Asaka, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1978, Ser. No. 913,501
Claims priority, application Japan, Jul. 28, 1977, 52-90772; Feb. 2, 1978, 53-10772; Feb. 22, 1978, 53-19512
Int. Cl.[2] C07D 333/38
U.S. Cl. 549—89 **6 Claims**

1. A 4-substituted methylene-1,3-dithietane-2-carboxylic acid or the lower alkyl ester thereof represented by the formula



wherein R^1 is a carboxyl group or the function derivative residue thereof selected from the group consisting of carboxylic acid lower alkyl ester residue, carboxylic acid aralkyl ester residue, a carbamoyl group, N-monoalkylcarbamoyl group, N,N-dialkylcarbamoyl group, a carboazoyl group, and a cyano group; R^2 is a carboxyl group or the functional derivative residue thereof selected from the group consisting of carboxylic acid lower alkyl ester residue, carboxylic acid aralkyl ester residue, a carbamoyl group, N-monoalkylcarbamoyl group, N,N-dialkylcarbamoyl group, a carboazoyl group, and a cyano group, a hydrogen atom, a lower alkyl group, a lower hydroxyalkyl group, a lower alkoxyalkyl group, a lower carboxylalkyl group, a lower arylalkyl group, a lower alkoxy group, a lower alkanoyl group, $R^4S(O)_n$ group wherein R^4 represents a lower alkyl group and n represents 0, 1 or 2, an aryl group which may have a substituent selected from the group consisting of hydroxyl and alkoxy groups, an aroyl group, a lower alkenyl group, a sulfamoyl group, or a heterocyclic residue which may have a substituent selected from the group consisting of a hydroxyl group, methyl group, and alkylthio group; and R^3 represents a hydrogen atom or a lower alkyl group.

4,198,340

PROCESS FOR STEREOISOMERIZATION OF CIS-3-METHYL-Δ⁴-TETRAHYDRO-CIS,CIS-PHTHALIC ANHYDRIDE

Nagao Ariga, Chiba; Minoru Yamamoto, Ichihara; Katsuji Takahashi, Chiba, and Takehisa Mizuno, Ichihara, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan

Filed Mar. 20, 1979, Ser. No. 22,112
Int. Cl.[2] C07D 307/89
U.S. Cl. 260—346.3 **2 Claims**

1. A process for isomerizing cis-3-methyl-Δ^4-tetrahydro-cis,-cis-phthalic anhydride into its stereoisomer, trans-3-methyl-Δ^4-tetrahydro-cis,cis-phthalic anhydride, which comprises heating cis-3-methyl-Δ^4-tetrahydro-cis,cis-phthalic anhydride in the presence of an alkali metal compound.

4,198,341

2,5,5-TRIMETHYL-3-CARBALKOXY-4(β,β-DIHALOVINYL)-4,5-DIHYDROFURANS

Hans-Georg Schmidt, Niederkassel, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

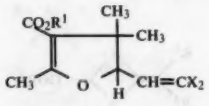
Division of Ser. No. 937,622, Aug. 28, 1978. This application Feb. 9, 1979, Ser. No. 11,027

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740479; Mar. 23, 1978, 2812672; Mar. 23, 1978, 2812673; Jun. 9, 1978, 2825363

Int. Cl.² C07D 307/32

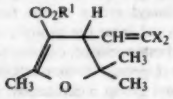
U.S. Cl. 260—347.5 **4 Claims**

1. A 2,4,4-trimethyl-3-carbalkoxy-5-(β,β-dihalogenvinyl)-4,5-di-hydrofuran of the formula



wherein R^1 is a straight-chain or branched alkyl radical and X represents chlorine or bromine.

3. A 2,5,5-trimethyl-3-carbalkoxy-4-(β,β-dihalogenvinyl)-4,5-dihydrofuran of the formula



wherein R^1 is a straight-chain or a branched alkyl radical and X represents chlorine or bromine.

4,198,342

METHOD OF PREPARING DIHALOGEN VINYL CYCLOPROPANECARBOXYLIC ACID ESTERS

Hans-Georg Schmidt, Niederkassel, Fed. Rep. of Germany, assignor to Dynamit Nobel Atkiengesellschaft, Troisdorf, Fed. Rep. of Germany

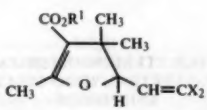
Division of Ser. No. 937,622, Aug. 28, 1978. This application Feb. 9, 1979, Ser. No. 11,028

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740479; Mar. 23, 1978, 2812672; Mar. 23, 1978, 2812673; Jun. 9, 1978, 2825363

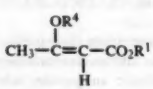
Int. Cl.² C07D 307/30

U.S. Cl. 260—347.5 **20 Claims**

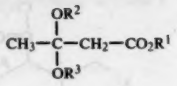
1. A process for preparing a 2,4,4-trimethyl-3-carbalkoxy-5-(β,β-dihalogenvinyl)-4,5-dihydrofuran of the formula



wherein R^1 is a straight-chain or branched alkyl radical and X represents chlorine or bromine, which comprises contacting a β-alkoxycrotonic acid ester of the formula

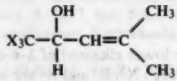


and/or a 3,3-bisalkoxybutyric acid ester of the formula



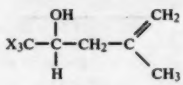
wherein R^1, R^2, R^3 and R^4 are the same or different and represent straight-chain or branched alkyl radicals with:

(a) a 1,1,1-trihalogen-4-methyl-3-pentene-2-ol of the formula



wherein X represents chlorine or bromine, in the presence of an acid catalyst; and/or

(b) a 1,1,1-trihalogen-4-methyl-4-pentene-2-ol of the formula



wherein X represents chlorine or bromine, in the presence of an acid catalyst.

4,198,343

METHOD OF PREPARING DIHALOGEN VINYL CYCLOPROPANECARBOXYLIC ACID ESTERS

Hans-Georg Schmidt, Niederkassel, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

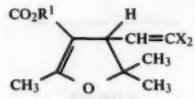
Division of Ser. No. 937,622, Aug. 28, 1978. This application Feb. 9, 1979, Ser. No. 11,029

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740479; Mar. 23, 1978, 2812672; Mar. 23, 1978, 2812673; Jun. 9, 1978, 2825363

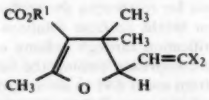
Int. Cl.² C07D 307/30

U.S. Cl. 260—347.5 **4 Claims**

1. A method of preparating a 2,5,5-trimethyl-3-carbalkoxy-4-(β,β-dihalogenvinyl)-4,5-dihydrofuran of the formula



wherein R^1 is a straight-chain or branched alkyl radical and X represents chlorine or bromine which comprises subjecting a 2,4,4-trimethyl-3-carbalkoxy-5-(β,β-dihalogenvinyl)-4,5-dihydrofuran of the formula



wherein R^1 represents a straight or branched alkyl radical and X represents chlorine or bromine to thermal rearrangement.

4,198,344

PROCESS FOR THE PREPARATION OF POLYHYDROXYLATED STEROIDS, LYSERGOL AND ERGOLINIC ALKALOIDS

Giorgio Ferrari, Milan, Italy, assignor to Simes Societa Italiana Medicinali e Sintetici S.p.A., Milan, Italy

Filed Aug. 4, 1978, Ser. No. 931,296

Claims priority, application Switzerland, Aug. 12, 1977, 9916/77

Int. Cl.[2] C07J *9/00*

U.S. Cl. 260—397.25 18 Claims

1. In a process for the production of hormones of themetamorphosis of insects and for the production of ergolinic alkaloids the improvement comprising extracting said hormones and alkaloids from a plant of the Convolvulaceae family, Ipomoeae section, Petaloidea (Choisy) genus.

4,198,345

PROCESS FOR THE PRODUCTION OF BIS-AZOMETHINE PIGMENTS

Douglas Mowat, Glasgow, Scotland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 22, 1978, Ser. No. 908,182

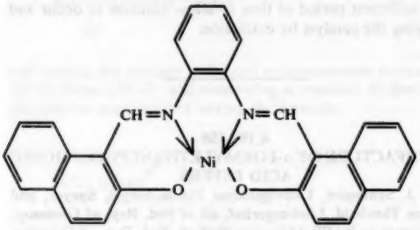
Claims priority, application United Kingdom, May 31, 1977, 22899/77

Int. Cl.[2] C07F *15/04*

U.S. Cl. 260—439 R 16 Claims

1. A process for the production of a compound having the formula

I

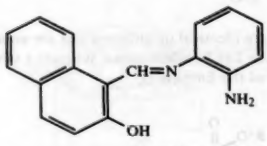


in the pigmentary form in which it has an orange red colour and has an x chromaticity coordinate of from 0.59 to 0.63 and a y chromaticity coordinate of from 0.33 to 0.36, which process comprises:

(a) forming a suspension of 2-hydroxy-1-naphthaldehyde in an alkaline medium in the presence of an antioxidant,

(b) reacting this suspension with the stoichiometric proportion of o-phenylene diamine required to form the compound having the formula

II



(c) metallising the compound of formula II with a solution of a nickel salt

(d) reacting the metallised compound of formula II with the stoichiometric proportion of 2-hydroxy-1-naphthaldehyde required to form the compound of formula I and

(e) isolating the compound of formula I.

4,198,346

PREPARATION OF TRIALKOXYSILANOLS

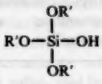
Karl O. Knollmueller, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jun. 1, 1979, Ser. No. 44,828

Int. Cl.[2] C07F *7/04*

U.S. Cl. 556—463 12 Claims

1. A process for the preparation of sterically hindered trialkoxysilanol compounds of the formula:



wherein R' is independently selected from hydrogen, alkyl, alenyl, aryl, or aralkyl, with the proviso that at least a majority of the pendant R' groups attached to the central Si atom are sterically hindered alkyl groups having at least 3 carbon atoms, comprising reacting a corresponding trialkoxyhalosilane of the formula, $(R'O)_3SiX$, wherein X is a halogen and R' is defined as above, with solid bicarbonate is a polar non-protonic solvent medium in the presence of a catalytic amount of water.

4,198,347

2(2,2-DICHLOROVINYL)-3,3-DIMETHYL-CYCLOPROPANE CARBOXYLATES

Nazim Punja, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 684,956, May 10, 1976, abandoned. This application Jul. 17, 1978, Ser. No. 925,239

Claims priority, application United Kingdom, May 16, 1975, 20884/75; May 16, 1975, 20885/75; May 16, 1975, 20893/75

Int. Cl.[2] C07C *69/74, 121/48*

U.S. Cl. 260—464 2 Claims

1. Ethyl 2(2,2-dichlorovinyl)-3,3-dimethyl-1-ethoxycarbonylcyclopropane carboxylate.

2. Ethyl 1-cyano-2(2,2-dichlorovinyl)-3,3-dimethylcyclopropanecarboxylate.

4,198,348

PROCESS FOR THE PREPARATION OF AMINES

Franco Bertini, S. Felice, and Carlo A. Pauri, Colleferro, both of Italy, assignors to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Jun. 8, 1978, Ser. No. 913,695

Claims priority, application Italy, Jun. 14, 1977, 24640 A/77

Int. Cl.[2] C07C *85/147*

U.S. Cl. 260—563 C 12 Claims

1. A process for the preparation of an amine of the formula RNH_2, wherein R represents a hydrocarbon radical containing up to 18 carbons selected from the group consisting of an aliphatic radical, an arylaliphatic radical, a cycloaliphatic radical and an aromatic radical, said process comprising reacting an amide having the formula $RCONH_2$, wherein R has the aforesaid meaning at a pH less than or equal to 7 with gaseous chlorine, in a medium free of alkaline or alkaline earth metal hydroxide to form the corresponding N-chloroamide, isolating the thus formed N-chloroamide and subsequently reacting said N-chloroamide with an alkali hydroxide, an earth alkali hydroxide or a mixture thereof, the molar ratio of the $(OH)^-$ groups of said hydroxides to the $(CONH)^-$ group of said amide being maintained at a value smaller than or equal to 3:1.

4,198,349

BENZYLIDENEANILINE DERIVATIVES

George W. Nuss, Jr., Lansdale; Norman J. Santora, Roslyn, and George H. Douglas, Malvern, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 839,960, Oct. 6, 1977, Pat. No. 4,176,198. This application Sep. 26, 1978, Ser. No. 945,827
Int. Cl.[2] C07C *119/10*
U.S. Cl. 260—566 F 2 Claims

1. A compound selected from the group consisting of N-(o-chlorobenzylidene)-2-methyl-3-chloroaniline, N-(p-chlorobenzylidene)-2-methyl-4-chloroaniline and N-(p-chlorobenzylidene)-2-methyl-3-chloroaniline.

4,198,350

AMINATION/DEMETHYLATION PROCESS

Ellis K. Fields, River Forest, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 107,544, Jan. 18, 1971, abandoned, which is a division of Ser. No. 663,245, Aug. 25, 1967, Pat. No. 3,625,989. This application Feb. 12, 1976, Ser. No. 657,498
Int. Cl.[2] C07C *85/11*
U.S. Cl. 260—580 13 Claims

1. A process for preparing aromatic amines which comprises heating a composition consisting essentially of an aromatic compound having a nitro group and a methyl group ortho to each other at a temperature of from about 450° C. to 750° C. for 1–100 seconds to convert simultaneously said nitro group to an amine group and demethylate said ortho methyl group wherein any solvent present is selected from the group consisting of benzene and hexafluorobenzene.

4,198,351

FORMALDEHYDE PRODUCTION PROCESS

Anthony J. Branecky, Kingsville, and David W. Harris, Corpus Christi, both of Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 15, 1977, Ser. No. 787,739
Int. Cl.[2] C07C *45/16*
U.S. Cl. 260—603 C 20 Claims

1. In a vapor phase process for the production of formaldehyde wherein a mixture comprising methanol and air are contacted with a silver catalyst to produce a formaldehyde-containing product, the improvement which comprises incorporating a small amount of a halogen-containing compound, in the vapor phase, into the mixture comprising methanol and air which is contacted with the said silver catalyst, the amount of said halogen-containing compound being an amount which will increase the selectivity of the reaction to formaldehyde but which will not cause loss of reaction.

4,198,352

INTERNAL OLEFIN HYDROFORMYLATION PROCESS

Leo Kim, Sittingbourne, England, and Sunny C. Tang, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 29, 1978, Ser. No. 964,319
Int. Cl.[2] C07C *45/10*
U.S. Cl. 260—604 HF 4 Claims

1. A process for preparing substantial amounts of linear aldehydes by hydroformylating internal olefins having 4 to about 30 carbon atoms, by contacting said olefins with carbon monoxide, and hydrogen at a temperature of from about 25° C. to about 180° C. and a pressure ranging from about 5 kg/cm^2 to about 200 kg/cm^2 in the presence of a catalyst comprising:

(a) a platinum complex having the following formula:

$$PtCl(CO)L_2{}^+An^-$$

wherein An^- is BPh_4^-, BF_4^-, ClO_4^-, PF_6^-, NO_3^- or SiF_6^{--} and L is a complexing ligand having the formula:

$$(RO)_aBR_b$$

wherein B is phosphorus, arsenic, antimony or bismuth, R is aryl, alkyl, aralkyl or alkaryl with less than 20 carbon atoms, wherein R is the same or different, a is an integer from 0 to 3, 0 has a value of 3-a; and

(b) a modifying metal halide selected from $SnCl_2$, $ZnCl_2$, and $GeCl_2$ where the mole ratio of said metal halide to said platinum complex ranges from about 1 to about 100.

4,198,353

IRIDIUM OR RHODIUM TRIHALIDE POLYMER BOUND HYDROGENATION AND HYDROFORMYLATION CATALYST

John T. Carlock, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 924,596, Jul. 14, 1978. This application Dec. 26, 1978, Ser. No. 973,288
Int. Cl.[2] C07C *45/10*
U.S. Cl. 260—604 HF 2 Claims

1. A method for converting olefins to aldehydes comprising converting said olefins at temperatures of from about 60° C. to about 100° C. and pressures of from about 300 to about 3500 psig H/CO gas in the presence of a catalyst containing rhodium and iridium, wherein the catalyst is prepared by dissolving a rhodium or iridium trihalide compound having the general formula MHX_3, wherein M is rhodium or iridium, X is selected from the group consisting of florine, chlorine, bromine, or iodine, in an organic solvent, adding a polyvinylpyridine/divinylbenzene copolymer and refluxing the solution for a sufficient period of time to allow reaction to occur and purifying the catalyst by extraction.

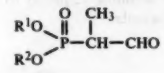
4,198,354

MANUFACTURE OF α-FORMYLETHANEPHOSPHONIC ACID ESTERS

Hans J. Schrepfer, Ludwigshafen; Hardo Siegel, Speyer, and Hans Theobald, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

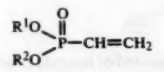
Filed Mar. 20, 1978, Ser. No. 888,510
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2715923
Int. Cl.[2] C07F *9/40*
U.S. Cl. 260—968 2 Claims

1. A process for the manufacture of an α-formylethanephosphonic acid ester of the formula I



I

where R^1 and R^2 are identical or different and are unbranched or branched alkyl or 1 to 5 carbon atoms, wherein a vinylphosphonic acid ester of the formula II



II

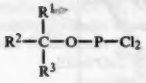
where R^1 and R^2 have the above meanings, is reacted with carbon monoxide and hydrogen in the presence of a rhodium-containing hydroformylation catalyst at from 50° to 180° C. and under a pressure of from 20 to 1,500 bars.

4,198,355
PREPARATION OF TERTIARY ALKYLPHOSPHORODICHLORIDITE DERIVATIVES

Kirk D. Schmitt, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 782,271, Mar. 28, 1977, Pat. No. 4,120,917.
This application Jul. 10, 1978, Ser. No. 922,873
Int. Cl.[2] C07F 9/141
U.S. Cl. 260—983 10 Claims

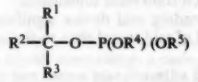
1. A method which comprises sequentially reacting, in the presence of a base, a tertiary alkylphosphorodichloridite compound having the formula:



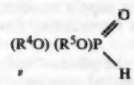
wherein R^1, R^2 and R^3 are selected from the group consisting of alkyl having from about 1 to about 4 carbon atoms, aryl having from about 6 to about 8 carbon atoms and aralkyl having from about 7 to about 10 carbon atoms, at least one being alkyl, with compounds having the formula:

R^4OH and R^5OH, respectively

in which R^4 and R^5 are selected from the group consisting of alkyl of from 1 to about 40 carbon atoms, aryl of from about 6 to about 40 carbon atoms, and aralkyl of from about 7 to about 40 carbon atoms, at temperatures of 0° C. or less to form a product having the formula:



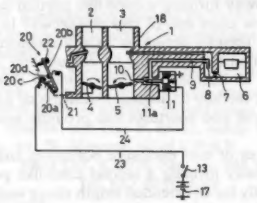
and heating the product so formed at temperatures from about 70° to about 170° C., and recovering a resultant disubstituted phosphorus acid product having the formula:



4,198,356
CONTROL SYSTEM FOR SECONDARY TRANSFER PORT IN DUAL CARBURETOR

Masatami Takimoto, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 12, 1978, Ser. No. 968,777
Claims priority, application Japan, May 29, 1978, 53/64091
Int. Cl.[2] F02M 7/22
U.S. Cl. 261—23 A 1 Claim



1. A control system for a secondary transfer port in a dual carburetor for an internal combustion engine, said control system comprising:

an ignition switch;

a primary evaporator having a first throttle valve therein;

a secondary evaporator having a second throttle valve therein and a transfer port opening thereinto;

a magnet valve for opening and closing the transfer port;

an electric circuit between said magnet valve and said ignition switch;

an adjusting switch in said circuit for closing it during high load engine operation to open the transfer port and for opening the circuit during low load operation to close the transfer port, said switch comprising:

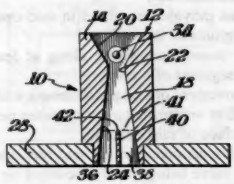
a lever pivotable in accordance with the degree of openness of the first throttle valve, said lever having a first contact thereon and being adapted to pivot throught a link means provided between the lever and the first throttle valve when it is rotated, said first contact being electrically connected to said ignition switch; and

a fixed contact contactable by said first contact, said fixed contact being electrically connected to said magnet valve.

4,198,357
FLOW DEVICE AND METHOD

Lester P. Berriman, Irvine; Robert D. Englert, Corona del Mar, and Kenneth R. Armstrong, Lakewood, all of Calif., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 8, 1978, Ser. No. 967,699
Int. Cl.[2] F02M 9/06
U.S. Cl. 261—44 B 10 Claims



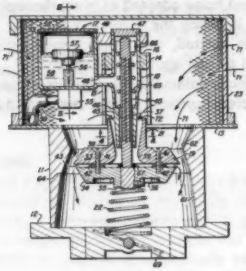
1. In a device for delivering a gaseous medium to utilization equipment having variable pressure conditions at its intake comprising, in combination, means defining a gaseous medium intake zone connecting with means defining a variable area throat zone for constricting the flow of the gaseous medium to increase the velocity thereof to sonic, means for adjustably varying the area of the throat zone in correlation with operating demands imposed upon the utilization equipment, wall means downstream from the throat zone arranged to provide a gradually diverging zone for efficiently recovering a substantial portion of the kinetic energy of the high velocity gaseous medium as static pressure whereby the velocity of the gaseous medium through the throat zone is sonic over a wide range of pressure conditions at the intake of the utilization equipment, the improvement comprising flow splitter means spaced downstream from the adjustable throat zone and arranged to divide the downstream end portion of the gradually diverging zone into multiple zones of reduced divergence.

4,198,358

CARBURETOR WITH SELF ADJUSTING DOUBLE VENTURI

Fred Mineck, Phoenix, Ariz., assignor to Dorothy J. Archer, Phoenix, Ariz. and Jay A. Mineck, Montclair, Calif., part interest to each

Filed Feb. 9, 1976, Ser. No. 656,290
Int. Cl.[2] F02M 7/22, 1/02
U.S. Cl. 261—50 A 4 Claims



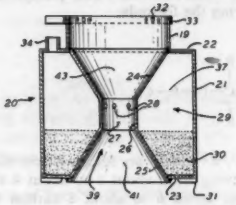
1. A carburetor comprising:
a hollow mixing chamber provided with a fuel inlet means at one end and a fuel outlet means at the other end,
the interior of said hollow chamber forming a venturi shaped opening tapering from a minimum diameter at a point along its length toward a greater diameter opening at each end of said chamber,
piston means movably mounted in said opening for movement longitudinal thereof,
said piston means comprising along at least a part of its length a segment of a cone,
whereby movement of said piston means within said opening forms a first venturi between its outer periphery and the inside surface of said opening,
a needle valve arranged within said fuel inlet means,
said needle valve being fixedly mounted on said carburetor and extending within said fuel inlet means,
said piston means having a hollow extension for movement around and along the outer periphery of one end of said fuel inlet means,
the inside surface of said hollow extension forming with said outside surface of said fuel inlet means a passageway forming a second venturi,
biasing means attached to said carburetor and engaging said piston means for biasing said piston means toward said fuel inlet means,
said needle valve controlling the flow of fuel through said fuel inlet means, said opening and around said piston means and into said fuel outlet means, and
air inlet means connected to said first venturi and said passageway,
said air inlet means transmitting air into said passageway for mixing with the fuel ejected from said fuel inlet means and separately into said first venturi for mixing air with the fuel and air mixture from said fuel inlet means over at least a part of the outer periphery of said piston means.

4,198,359

APPARATUS FOR GASIFICATION OF LIQUIDS

John J. Todd, 11 Overbrook, West Horsley, Surrey, England

Continuation-in-part of Ser. No. 873,909, Jan. 31, 1978, abandoned, which is a continuation-in-part of Ser. No. 708,565, Jul. 26, 1976, abandoned. This application Mar. 30, 1979, Ser. No. 25,460
Int. Cl.[2] B01F 3/04
U.S. Cl. 261—77 11 Claims



1. A waste water treatment plant comprises:
a waste water treatment vessel having side walls and a bottom wall and being at least six feet in depth and at least eight feet in each transverse dimension;
at least one gasification device having an average operational density greater than that of water;
suspension means for suspending said device within a body of waste water received in said treatment vessel;
said device being less than about two feet in height and less than about two feet in each transverse dimension;
said suspension means suspending said device significantly closer to said bottom wall of said vessel than to the water surface;
gas supply means positioned adjacent said vessel and a gas supply conduit extending from said gas supply means to said device;
said device comprising a hollow ring-like enclosure defining a generally annular chamber for receiving gas to be introduced into said waste water;
gas inlet means connected to said gas supply conduit and communicating with said chamber for enabling flow of gas thereto;
the longitudinal axis passing through the plane of said ring being vertically oriented, and the central opening of said ring defined by the axially-facing surfaces of said enclosure defining a passageway for induced upward flow of said waste water;
an axially-extended constriction of substantially constant diameter defined at the middle of said passageway, said constriction provided with apertures communicating with said annular chamber to enable gas flow into said constriction, said gas flow and resulting ascending bubble stream inducing flow of water upwardly through said passageway, said gas flow and bubble stream comprising the sole means effecting said water flow;
the said surfaces of said enclosure bordering and defining said passageway forming a cone-like portion converging from the flow input end of said passageway to said constriction, to thereby define an axially-extended zone of flow convergence, whereby in conjunction with said constriction to increase the flow velocity through said constriction, thereby to augment shearing of gas bubbles emerging from said apertures and promote small bubble formation;
the said surfaces of said enclosure bordering and defining said passageway forming a second cone-like portion diverging axially for an extended length above said constriction, whereby to define an extended zone of flow divergence for distributing the gasified flow into the body of said waste water;
the body of water within said vessel being substantially free

of structure other than said at least one device, suspension means and gas supply conduit, whereby said gasified flow initiates and sustains a circulation pattern in which at least the smaller diameter gas bubbles are carried down again into the body of the water after the gasified flow has ascended from said device to near the water's surface for prolonged exposure to oxygen transfer to the waste water.

4,198,360

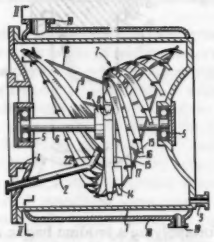
APPARATUS FOR HEAT-MASS EXCHANGE PROCESSES WITH PARTICIPATION OF LIQUID

Alexandr V. Shafranovsky, Balashikha, Molodezhnaya ulitsa, 4, kv. 7, Moskovskaya oblast; Viktor M. Olevsky, Leningradsky prospekt, 75-a kv. 91, Moscow; Vladimir K. Chubukov, Komsomolsky prospekt 41, kv. 97, Moscow, and Jury A. Baskov, shosse Entuziastov 156, kv. 20, Moscow, all of U.S.S.R.

Filed Oct. 4, 1978, Ser. No. 948,989

Int. Cl.[2] B01F *3/04*

U.S. Cl. 261—90 **8 Claims**



1. An apparatus for heat-mass exchange processes employing a liquid, comprising: a casing; means for introducing process source materials into said casing and discharging the final products thereform; at least one sprinkling device installed within said casing for rotation about its axis; chutes forming said sprinkling device, curved into a multiple-start spiral, diverging from the axis of said sprinkling device whereby hollows formed in said chutes are located on the concave side of the spiral; gaps being formed between coils of said sprial, and means for supplying a liquid to a central part of the sprinkling device, wherein: at least peripheral portions of at least two of said chutes gradually recede from the axis of said sprinkling device and are displaced in a direction parallel to the axis of said sprinkling device; and the other ends of said chutes are located in different planes perpendicular to the axis of said sprinkling device.

4,198,361

FILM-TYPE ROTARY MASS-AND-HEAT EXCHANGE COLUMN

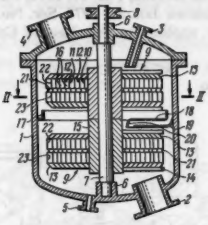
Alexandr V. Shafranovsky, Balashikha-4, Molodezhnaya ulitsa 4, kv. 7, Moskovskaya oblast; Vitaly R. Ruchinsky, prospekt Mira 202, kv. 21, Moscow; Viktor M. Olevsky, Leningradsky prospekt 75a, kv. 91, Moscow; Vladimir P. Gavrilin, Kastanaevskaya ulitsa 27, Korpus 5, kv. 25, Moscow; Vladimir K. Chubukov, Komsomolsky prospekt 41, kv. 97, Moscow; Valentina N. Gromoglasova, uilitsa P. Korchagina 1, kv. 72, Moscow; Vladimir S. Bushev, Balaklavsky prospekt 4, Korpus 3, kv. 206, Moscow; Jury A. Baskov, shosse Entuziastov 156, kv. 20, Moscow; Violetta V. Kurkovskaya, prospekt Mira, 99, kv. 12, Moscow; Boris A. Gurkov, ulitsa Geroev Panfilovtesv 13, kv. 116, Moscow, and Ivan F. Evkin, bulvar Matrosa Zheleznyaka 9a, kv. 78, Moscow, all of U.S.S.R.

Filed Oct. 4, 1978, Ser. No. 948,990

Int. Cl.[2] B01F *3/04*

U.S. Cl. 261—89 **13 Claims**

1. A film-type rotary mass-and-heat exchange column, comprising: a shell; means for admitting into said shell the original stock involved in the process, and withdrawing the end products therefrom; a vertical shaft rotatably mounted in said shell; a number of contact stages secured on said shaft; bands forming said contact stages, said bands being curved into spirals diverging from said shaft and flanged towards the shaft at their edges, which bands are provided with longitudinal beads bulging outwards on the concave surface of the bands to establish a number of channels adjacent in height; at least one device for the liquid to flow over from said superjacent contact stage



onto the subjacent contact stage; at least one circular pocket of said device for the liquid to flow over, said pocket being secured on the inner side wall of the shell and serving for receiving the liquid thrown off from said superjacent contact stage; a downflow spout of said device for the liquid to flow over; the intake end of said downflow spout communicated with said circular pocket; the discharge end of said downflow spout arranged above said subjacent contact stage.

4,198,362

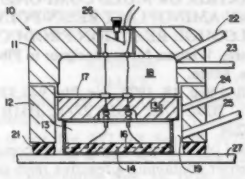
METHOD AND APPARATUS FOR MOLDING AND REPLICATING MINUTE SURFACE CHARACTERISTICS

Arthur Ticker, 12117 Maddox La., Bowie, Md. 20715, and Herman S. Preiser, 2 Revell Rd., Severna Park, Md. 21146

Filed Oct. 2, 1978, Ser. No. 947,390

Int. Cl.[2] B29F *5/00*; B29C *1/02*; G01B *5/28*; G01N *19/02*

U.S. Cl. 264—40.1 **13 Claims**



1. A method of replicating an underwater surface of a ship comprising the steps of:

positioning a container of thermo-plastic replicating material adjacent the underwater surface to be replicated withdrawing the water from between the replicating material and the surface;

heating the replicating material to its softening point;

applying pressure of the ambient water to force the replicating material against the surface;

cooling the replicating material to harden it; and

withdrawing the replicating material containing the negative image of the surface from contact with the surface.

3. An underwater replicating device comprising:

a housing for underwater attachment to a surface to be replicated;

first means within said housing for obtaining the impression of a surface being replicated;

second means for sealing said housing against the intrusion of the ambient water while the first means is applied underwater to the surface being replicated; and

means for releasing said device together with the first means from the surface.

4,198,363

CONTINUOUS EXTRUSION OF THERMOPLASTIC MATERIALS

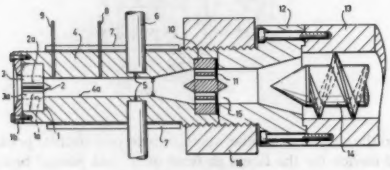
Gerard Noel, Eupen, Belgium, assignor to Noel, Marquet & Cie, S.A., Eupen, Belgium

Division of Ser. No. 658,462, Feb. 17, 1976, Pat. No. 4,087,222. This application Jan. 31, 1978, Ser. No. 873,895

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1975, 2507979

Int. Cl.[2] B29F *3/04*

U.S. Cl. 264—45.9 **9 Claims**



1. A method of continuously extruding an extrudable thermoplastic material having a solid, hollow or open cross-section through a shaping nozzle, the method comprising:

continuously extruding the thermoplastic material through a shaping nozzle that shapes the cross-section thereof to the desired profile;

continuously applying a liquid medium to the surface of the thermoplastic material being extruded prior to the thermoplastic material's entering the shaping nozzle; and

roughening the surface of the thermoplastic material being extruded after applying the liquid medium but prior to the extruded material's entering said shaping nozzle.

4,198,364

PRINTING MATRIX OR MOLD COMPONENT FORMED FROM AN AMINOPLAST RESIN-POLYVINYL ALCOHOL REACTION PRODUCT

William A. Laurie, Winona, Minn., assignor to Fiberite Corporation, Winona, Minn.

Filed Sep. 18, 1978, Ser. No. 943,329

Int. Cl.[2] B29C *1/02*; B32B *27/42*; B41B *5/02*

U.S. Cl. 264—226 **19 Claims**

1. The method of making printing plates comprising,

forming a carrier containing a reactive resin comprising the reaction product of an aminoplast resin and polyvinyl alcohol under heat and pressure against a master printing plate so as to produce a cured negative of said master printing plate,

inserting said cured negative into a molding device so as to provide a mold insert therein, and

flowing a plastic material against said molded negative insert and curing said plastic to produce a copy of said master printing plate.

7. A negative printing plate against which a plastic material may be molded under heat and pressure to produce a positive printing plate comprising a reaction product of the components of an aminoplast resin and polyvinyl alcohol in a cured condition on a carrier layer.

8. A printing plate matrix capable of being shaped under heat and pressure and then being used as a part of a mold for imparting a portion of its shape to a plastic material under heat and pressure comprising,

a carrier having a porous characteristic, and

a curable resin carried by said carrier capable of receiving very sharply defined impressions on a surface thereof upon molding and being cured, said surface being able to be used as a mold against which another plastic material may be shaped,

said resin including a reaction product of the components of an aminoplast resin and polyvinyl alcohol.

18. The shaped mold resulting from curing a printing plate matrix as claimed in claim **8** against a polyester material.

4,198,365

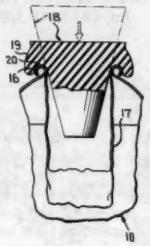
METHOD OF APPLYING PRODUCT BAGS IN AEROSOL BARRIER PACKAGES

Peter G. Pelton, St. Louis, Mo., assignor to The Continental Group, Inc., New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 2,031

Int. Cl.[2] B29C *17/00*

U.S. Cl. 264—249 **9 Claims**



1. A method for applying a product bag to an aerosol can of the type including a valve cup receiving opening and seat defined by a curled lip, comprising: inserting a generally cylindrical product bag having a diameter corresponding to the diameter of said valve cup receiving opening in the aerosol can with an upper portion of the product bag extending through the valve cup receiving opening and above the curled end, inserting a resiliently deformable flaring tool portion within an open end of said bag, pressing and radially outwardly expanding the product bag upper portion over and around the curled lip with said tool and deforming said tool portion as said bag is pressed about said curled lip by said tool.

4,198,366

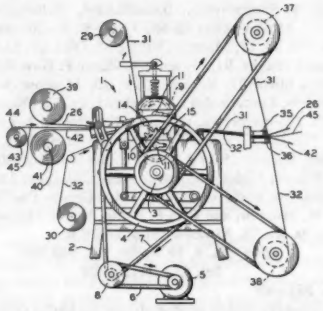
METHOD OF MULTI-SHEET PLEATING

Sergius N. Luboshez, 3530 Pinetree Ter., Falls Church, Va. 22041

Continuation of Ser. No. 754,588, Dec. 27, 1976, abandoned. This application Jun. 26, 1978, Ser. No. 918,765

Int. Cl.[2] B29C *17/02*

U.S. Cl. 264—129 **9 Claims**



1. A method producing in an apparatus, concurrently, a

plurality of pleated plastic sheets so that they have duplicate pleats, including the steps of:

(a) arranging a group of at least two very thin sheets, of material to be pleated, in face to face layered relation to each other with the juxtaposed faces of adjacent sheets in unattached, freely separable, condition and with at least two sheets of the group being very thin transparent platic sheet material of a thickness of from 1 to 10 mils, and with one of said two sheets exposed at, and forming, one face of the group and the other of said two sheets being at, and forming, the other face of the group;

(b) mechanically maintaining the sheets in said layered relation, in separable condition, and in fixed relation to each other edgewise and endwise and, while so maintaining the sheets of the group, introducing the group into said apparatus and therein advancing the group endwise, unidirectionally, along a predetermined path to cause successive longitudinal portions of said group, each of which group portions comprises facewise aligned portions of the sheets, respectively, to pass successively through a pleating station;

(c) at said pleating station, folding each group portion, as a unit, when it is currently at said station, to form the sheet portions of said group portion concurrently into a plurality of regular transverse like pleats, in which each pleat in each sheet has common edges with those adjacent pleats of the same sheet, between which pleats it is disposed endwise of the sheets, and in which each pleat of each sheet is interfitted fully within the concurrently formed like pleat in an adjacent juxtaposed sheet, and in which one side of each interfitted pleat overlaps and shields a part of the outwardly facing face of the contiguous side of the pleat next adjacent to said one side, endwise of the sheets, leaving a remainder area of said outwardly facing face exposed, so that the shape and area of said remainder area of said contiguous side of each pleat in said two outer sheets faces outwardly facewise of the group, and all of said remainder areas of the pleats of all of the sheets are substantially identical;

(d) then, along a succeeding portion of said path, simultaneously pressing flat and heating said portions of said group of sheets, while they remain in the group, to dispose the pleats in said flat pressed, interfitted, and overlapped condition after the pleats have been formed;

(e) thereafter, at another succeeding portion of said path, while maintaining said pleated portions of the group of sheets in said flat pressed condition, cooling the group of pleated sheets at said portions until the pleats are set normally in said flat pressed condition; and

(f) subsequently separating the sheets from each other.

4,198,367

METHOD AND APPARATUS FOR PRODUCING RETREADING ENVELOPES

John R. Burrell, 202 King Rd., Chalfont, Pa. 18914

Continuation-in-part of Ser. No. 718,792, Aug. 30, 1976, Pat. No. 4,116,605. This application Apr. 28, 1978, Ser. No. 901,080

Int. Cl.[2] B29D *23/04*

U.S. Cl. 264—142 **21 Claims**

1. In an apparatus for producing a retreading envelope for tires,

extruder means delivering an envelope forming material in the shape of a split ring including a pair of skirts with a crown therebetween, said extruder means including a die ring, a core positioned within said die ring and cooperating therewith to define a generally annular extruder orifice,

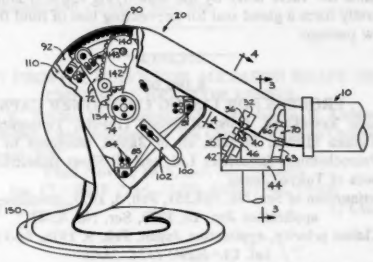
a stretching wheel means for stretching the material delivered from said extruder means into a predetermined shape, said stretching wheel means including a rotating means,

means guiding the material delivered from said extruder means onto the periphery of said rotating means with the crown in contact therewith and a skirt located on each side thereof, said guiding means including a plurality of roller means engaging each skirt of said split tube to hold said skirts at a predetermined position relative to said stretching wheel and to maintain said skirts in spaced apart relation as said stretching means stretches the material delivered thereto, and

means for driving said rotating means to move about an axis of rotation to cause said material to move around said axis for a predetermined distance.

19. In a method of producing a retreading envelope for tires the steps of:

forming a split tube of material to be formed into a retreading envelope, said split tube having a pair of side skirts with a crown therebetween



delivering the split tube onto the periphery of a rotating stretching wheel so that the material is stretched into a predetermined shape,

maintaining the side skirts in a separated condition and holding said side skirts at a predetermined position relative to said stretching wheel while the crown is delivered and stretched over said rotating stretching wheel,

removing the stretched split tube of material from the stretching wheel after it is moved partly around the circumference thereof, and

forming the removed split tube into an annular shape for use as a retreading envelope.

4,198,368

VALVE

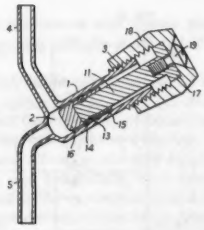
Douglas D. J. Nightingale, St. Albans, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 617,510, Sep. 29, 1975, abandoned, which is a continuation of Ser. No. 482,983, Jun. 25, 1974, abandoned. This application Nov. 28, 1978, Ser. No. 964,356

Claims priority, application United Kingdom, Jul. 3, 1973, 31564/73

Int. Cl.[2] F16K *41/04*

U.S. Cl. 264—263 **1 Claim**



1. A method for the production of a spindle for a fluid flow control valve comprising a body having a valve seat with a flow passage passing through the seat and a spindle slideable within the valve body to bring one end into engagement with

the valve seat for occluding the flow passage during operation of the valve; the method comprising

forming a mandrel with an end portion thereof having a substantially cylindrical surface with an annular groove therearound,

insetting into said groove a resilient annulus with its external surface substantially flush with the cylindrical surface of the mandrel, and

injection moulding an inert thermoplastic material around said end portion of the mandrel to form a continuous sheath therearound, the part of the mould overlying the resilient annulus being shaped to provide around the sheath an integral annular ridge of diameter greater than the internal diameter of the valve body,

whereby on assembly of the valve, the annular ridge is biased against the valve body by the underlying resilient annulus to thereby form a gland seal for preventing loss of fluid from the flow passage.

4,198,369

PROCESS FOR LINING CONTAINER CAPS

Tetsuo Yoshikawa, Katsuta; Shinzi Hayata, Yamaguchi, and Yutaka Hirota, Mitaka, all of Japan, assignors to Mitsui Petrochemical Industries Ltd. and Hi-Sheet Industries Ltd., both of Tokyo, Japan

Continuation of Ser. No. 765,351, Feb. 3, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,541

Claims priority, application Japan, Feb. 9, 1976, 51-12367

Int. Cl.[2] B29C *1/14, 13/02*

U.S. Cl. 264—268 **9 Claims**

1. A process for lining container caps, which comprises applying a dispersion in an aqueous medium of an olefin resin which is a mixture of (1) a resin selected from the group consisting of polyethylene, an ethylene/vinyl acetate copolymer, an ethylene/propylene copolymer, an ethylene/butene-1 copolymer, a propylene/butene-1 copolymer, and mixtures of at least two of said polymers, and (2) a modified product of said resin (1) which is a graft copolymer obtained by grafting an aliphatic dicarboxylic acid or its anhydride to said resin (1) to the inner bottom surface of a cap shell, subjecting the aqueous dispersion applied to a first-step heat treatment at a temperature below the thermo-forming temperature of the olefin resin, and then subjecting it to a second-step heat treatment at a temperature not lower than the thermo-forming temperature of the resin but below the heat decomposition temperature of the resin.

4,198,370

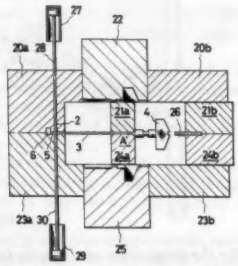
METHOD OF MOLDING AND STRETCHING STOPPERS

Tadashi Suzuki, Saitama, Japan, assignor to Sato Gasei Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 643,768, Dec. 23, 1975, abandoned. This application Nov. 14, 1977, Ser. No. 851,191

Int. Cl.[2] B29C *17/02*

U.S. Cl. 264—291 **6 Claims**



5. A method of making stoppers which includes a head, a crossbar and a filament portion interconnecting said head and crossbar wherein said filament portion comprises a smaller diameter filament portion near the crossbar and a larger diameter filament portion extending from said smaller diameter filament portion toward the head at least on a portion of the filament to be stretched, said method comprising:

(a) introducing a molten resin into a mold comprising mold means for said crossbar, mold means for said smaller diameter filament portion adapted to act as die means for extending said filament portion and mold means for the larger-diameter filament portion and the head,;

(b) opening said mold means for the larger diameter filament portion and the head of said stopper blank laterally to the filament portion;

(c) moving said mold means for the smaller diameter filament portion longitudinally toward the molded head, thereby extending the filament portion by exerting a stretching force on said smaller diameter filament portion and causing a portion of said larger diameter filament portion to be drawn through an arc shape opening in said mold means; and

(d) opening said mold members for the crossbar and said mold members for the smaller diameter filament portion to remove the stopper therefrom.

4,198,371

METHOD AND APPARATUS FOR MOLDING HOLDERS FOR DISC-LIKE OBJECTS

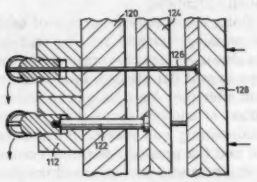
Gordon W. Holmes, Mississauga, Canada, assignor to Professional Packaging Limited, Mississauga, Canada

Continuation-in-part of Ser. No. 879,467, Feb. 21, 1978, which is a division of Ser. No. 733,916, Oct. 19, 1976, Pat. No. 4,095,608. This application Aug. 22, 1978, Ser. No. 935,762

Claims priority, application United Kingdom, Oct. 22, 1975, 43455/75

Int. Cl.[2] B29F *1/14*

U.S. Cl. 264—297 **5 Claims**



1. A method of molding an elongate resiliently flexible article having a generally C-shaped cross-section body with complimentarily-shaped inner and outer surfaces and an end wall integral with the body at each end thereof, the end walls defining a generally C-shaped opening in the ends of the body of smaller radius of curvature than the radius of curvature of the body, which comprises:

providing a mold having a mold cavity corresponding in shape to the shape of said elongate article, said mold consisting of an inner part-cylindrical elongate mold core and an outer mold member cooperating with said inner mold core to define said cavity, said outer mold member consisting of two parts separable about a part line which intersects the axis of said core, said cavity being shaped to provide the curvilinear extremities of the article lying on a straight line parallel to said mold part line;

injecting molten polymeric material into said mold cavity and solidifying said polymeric material in said mold cavity to provide said article therein;

opening said mold about said part line to expose the lower portion of said article body;

exposing the upper portion of said article body;

pushing the inner surface of said article in contact with said mold core away from the mold core to cause the curvilin-

ear extremities to expand resiliently until the distance therebetween reaches the diameter of the core and thereafter to cause the article to spring off the core; and

permitting the article to be resiliently restored to its initial shape.

4,198,372

PROCESS FOR INJECTION MOLDING A VEHICLE TIRE

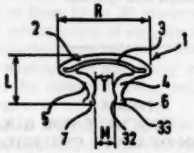
Giovanni Calori, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Division of Ser. No. 877,475, Feb. 13, 1978, Pat. No. 4,140,454, which is a division of Ser. No. 689,850, May 25, 1976, Pat. No. 4,106,888. This application Sep. 18, 1978, Ser. No. 943,382

Claims priority, application Italy, Jun. 13, 1975, 24326A/75

Int. Cl.[2] B29H 5/02; B29F 1/00

U.S. Cl. 264—326 1 Claim



1. A method for disassembling and reassembling a mold for molding a vehicle tire, said mold comprising an outer envelope and an inner body associated to form a cavity of the shape of a tire, said inner body comprising a core of radially displaceable sectors and upper and lower annular elements which are separable from one another and from the core along the direction of the core axis, said elements having at least two surfaces which correspond to the tire surfaces disposed between the inner zone connecting the sidewalls to the beads and a part of the axially outer zone of the beads, said method being adapted to remove from said mold an already formed and cured tire and to prepare the mold for a new cycle, said method comprising the steps of:

(a) removing said outer envelope of the mold around the tread of a molded and cured tire and the zones of the outer envelope which prevent access to the core sectors and varying the distance between said annular elements along the direction of the core axis;

(b) blocking and supporting the sectors of the core;

(c) separating the annular elements to separate them from one another and from the core along the direction of the core axis to spread out the tire sidewalls, and at substantially the same time blocking the beads to maintain them in contact with the surfaces of the annular elements which have formed their axially inner surfaces;

(d) releasing a part of the sectors to displace them at first radially towards the core center through the free space created by spreading the sidewalls, and then, in the direction of the core axis, to provide space for the maximum possible radial collapse of the remaining sectors, and subsequently collapsing said remaining sectors;

(e) releasing the bead associated to the lower annular element, causing therefore the disengagement of said bead from said lower annular element;

(f) advancing the upper annular element in the direction of the core axis to move the tire with the bead hooked to said upper annular element, and releasing said bead associated to the upper annular element;

(g) applying to the tire a force opposite to its forward motion to expel said tire from the upper annular element and to remove the tire from the space existing above the sectors;

(h) stopping the movement of the upper annular element;

(i) positioning an annular reinforcing structure for the tire with midline aligned with the equatorial plane of the mold determined before the displacement of the core sectors;

(j) expanding the sectors collapsed as in (d) and exerting with said sectors a radial thrust on the annular reinforcing structure;

(k) bringing again in the equatorial plane of the mold the sectors displaced during phase (d) in the direction of the core axis and then expanding radially said sectors between those already expanded in phase (j) so as to rebuild the core and to exert with all the core sectors a radial thrust on the annular reinforcing structure;

(l) moving the annular elements towards the core until they are again in contact with the core;

(m) reassembling the outer envelope around the inner body of the mold; and

(o) molding and curing a new tire.

4,198,373

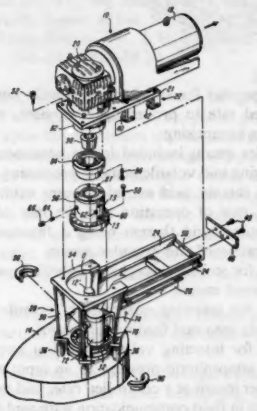
LOW PROFILE DRIVE FOR AGITATOR SHAFT OF CHEMICAL REACTOR VESSEL

Donald E. Kropp, Ft. Thomas, Ky., and Glenn E. Caldwell, Cincinnati, Ohio, assignors to The Ceramic Coating Company, Newport, Ky.

Filed Nov. 3, 1978, Ser. No. 957,480

Int. Cl.[2] B01F 7/16, 15/00; B01J 1/00, 10/00

U.S. Cl. 422—49 17 Claims



1. In combination with a chemical reaction vessel having a housing and a drive nozzle, a low profile drive assembly; comprising:

(a) an elongated agitator shaft with an upper end extending through the drive nozzle of the reaction vessel;

(b) removable cartridge seal means associated with the agitator shaft;

(c) low profile drive means with output shaft means for releasably connecting with the upper end of the elongated shaft;

(d) carriage support means connected to the housing of the reaction vessel within the overall height dimension of the drive means, said carriage support means including track means for guiding movement of a carriage;

(e) carriage means movably mounted upon the carriage support means, said low profile drive means being supportively carried by the carriage support means for movement along a path defined by said track means to move the drive means and output shaft thereof sidewise laterally from a closely spaced, vertical alignment with the upper end of the agitator shaft to a position which provides access to the upper end of the agitator shaft and the cartridge seal means removably associated therewith within

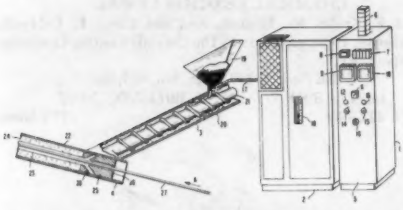
the overall height dimension of the drive means in the area occupied by the drive when in axial alignment with the agitator shaft.

4,198,374

VOLATILE LIQUID SUPPLY EQUIPMENT AND PROCESSES FOR INTRODUCING VOLATILE CROSS-LINKING AGENTS INTO POLYOLEFIN COMPOUNDS AND FOR THE EXTRUSION OF CROSS-LINKABLE POLYOLEFIN COMPOUNDS

Claude J. Arnaud, Riom; Jean M. Quemner, Clermont-Ferrand, and Gaston P. Roche, Riom, all of France, assignors to Societe Anonyme de Telecommunications, France

Continuation of Ser. No. 669,917, Mar. 24, 1976, abandoned. This application Nov. 16, 1977, Ser. No. 851,953
Claims priority, application France, Jan. 17, 1975, 75 01432
Int. Cl.[2] G05D *7/06;* G05B *11/32*
U.S. Cl. 422—111 **27 Claims**



1. Apparatus for supplying a volatile liquid at a precisely controlled rate to processing equipment, said apparatus for supplying comprising:

extruder means included in the processing equipment employing said volatile liquid in processing operations occurring therein, said extruder means exhibiting a determinable rate of operation and the rate of consumption of volatile liquid therein being a function of said rate of operation of said extruder means;

means for storing a supply of volatile liquid;

feed vessel means;

means for inserting quantities of volatile liquid from said supply into said feed vessel means;

means for injecting volatile liquid at ambient temperature and atmospheric pressure to an input means of said extruder means at a controlled rate, said means for injecting being in fluid communication with said feed vessel means and operating at a controlled rate;

means for continuously producing a first signal representing the rate at which volatile liquid is being injected to said input means by said means for injecting;

means for continuously producing a second signal representative of said rate of operation of said extruder means; and

means for controlling the rate of operation of said means for injecting as a function of the difference between first and second signals.

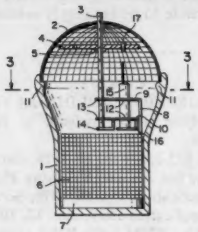
4,198,375

INCENSE BURNER

Patrick J. Rogers, 2520 NW 42nd Ave., Lauderhill, Fla. 33313

Filed Apr. 6, 1978, Ser. No. 893,899
Int. Cl.[2] A61L *9/02*
U.S. Cl. 422—126 **5 Claims**

1. An incense burner comprising an exterior receptacle, an ash collecting basket fitted within and contiguous to the inner walls of said receptacle, a spindle supported axially and partially within said exterior receptacle, an incense retaining plate held upon and in a plane perpendicular to said spindle, said plate having a plurality of apertures dimensioned to retain sticks of incense, a flame producing means, and a retaining structure contiguous to said basket shaped to accept and hold said flame producing means below said plate and to accept and



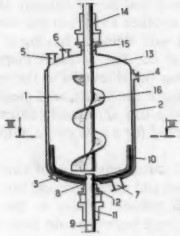
hold said spindle in place while permitting rotation of said plate about an axis through said spindle.

4,198,376

VERTICAL AUTOCLAVE FOR BULK POLYMERIZATION OF VINYL CHLORIDE BASED POLYMERS AND COPOLYMERS

Francis Fournel, Chauny, and Salomon Soussan, St. Fons, both of France, assignors to Rhone-Progil, Courbevoie, France

Continuation of Ser. No. 442,372, Feb. 14, 1974, abandoned. This application Aug. 10, 1977, Ser. No. 823,340
Int. Cl.[2] B01D *3/12, 7/16, 7/24;* B01J *3/04*
U.S. Cl. 422—135 **4 Claims**



1. A vertical autoclave for bulk polymerization of vinyl chloride based polymers and copolymers wherein during final polymerization the reaction medium converts from a fluid state to a solid powdered state, said autoclave is in the form of a cylindrical housing closed at its lower end by a curvilinear bottom wall contiguous with the cylindrical side wall of the housing, an agitator (B) within the housing comprising a shaft passing through the bottom of the housing along the vertical axis of symmetry thereof and at least one arm connected to said shaft of agitator (B) having a profile close to and extending along the curvilinear bottom wall of the housing, one or more agitators (A) within the housing each of which is formed with a shaft passing through the upper part of the housing and mounted for rotational movement about an axis parallel with the vertical axis of the cylindrical housing, a ribbon coiled in helical turns on the shaft extending downwardly into close proximity to the agitator (B) with the space between the ribboned shaft and the cylindrical wall of the housing being completely open to enable rotation of the ribboned shaft free of confinement, except of any portion of the arm of agitator (B) which extends upwardly for a short distance alongside the adjacent cylindrical wall of the housing, and means for independently driving the agitators.

4,198,377

PROCESS FOR RECOVERING MANGANESE FROM AQUEOUS ACIDIC SULPHATE SOLUTIONS

Alfred R. Burkin, Brentwood, and Kevork A. Chouzadjian, London, both of England, assignors to Interox Chemicals Limited, London, England

Filed Aug. 29, 1978, Ser. No. 937,833

Claims priority, application United Kingdom, Sep. 17, 1977, 38832/77

Int. Cl.[2] C01G 45/00, 9/06

U.S. Cl. 423—50 15 Claims

1. A process for recovering manganese from an aqueous acidic sulphate solution containing manganese and one or more of zinc, nickel, cobalt and iron comprising the steps of:

(a) introducing into the solution at least a stoichiometric amount of peroxymonosulphuric acid to oxidise the manganese to the Mn (IV) oxidation state in from 2 to 6 stages, each stage of introduction of the peroxymonosulphuric acid being followed by an ageing period of from 5 to 30 minutes between the first and second stages of introduction and of from 10 to 30 minutes between subsequent stages of introduction, if any, during which manganese salt precipitates from solution, from 20 to 60% of the peroxymonosulphuric acid being introduced in the first stage and the remainder being introduced in the subsequent stages,

(b) introducing neutralising agent into solution in one or more stages and in a total amount of from 100% to 133% of the stoichiometric amount needed to neutralise all the peroxymonosulphuric acid introduced in step (a), all the neutralising agent being introduced before at least the last 40% of the peroxymonosulphuric acid is introduced,

(c) maintaining the solution at a temperature of at least 60° C. during steps (a) and (b) and

(d) separating thereafter precipitated manganese salt from solution.

4,198,378

PROCESS FOR REMOVING CO_2, H_2S AND OTHER GASEOUS IMPURITIES FROM GASEOUS MIXTURES

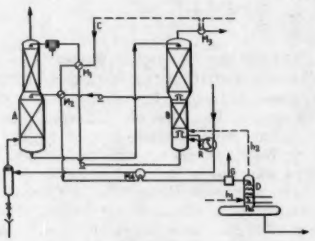
Giuseppe Giammarco, and Paolo Giammarco, both of San Marco 3242, Palazzo Morolin, Venice, Italy

Filed Nov. 2, 1977, Ser. No. 847,885

Claims priority, application Italy, Nov. 12, 1976, 69710 A/76; Feb. 3, 1977, 67229 A/77

Int. Cl.[2] B01D 53/34

U.S. Cl. 423—220 29 Claims



1. In a process for removing gaseous impurities, such as CO_2 and/or H_2S and the like from a gaseous mixture obtained by a gasification method in which combustible substances are reacted at elevated temperature with steam, comprising an absorption step in which said gaseous mixture is brought into contact in an absorption column with an aqueous alkaline absorbent solution, and a regeneration step in which said impurities are removed from the absorbent solution in a regeneration column by stripping with steam obtained mainly from a reboiler in which heat is recovered from the gaseous mixture to be purified by indirect heat exchange in the reboiler with the aqueous alkaline absorbent solution, and wherein the steam utilized in said gasification methods is produced in boilers fed with boiler feed water previously degassed and purified by a treatment with steam in suitable means, the improvement which comprises:

delivering said steam, at a pressure at least equal to that in said regeneration column, first to said degassing and purification columns and then to said regeneration column to be used again, wherein after said steam is used for degassing and purifying in said means said steam is delivered, at a pressure at least equal to the pressure in said regeneration column, to said regeneration column, said steam yielding heat initially to said boiler feed water in said degassing and purification means and then to the absorbent solution in the regeneration column.

4,198,379

NITROGEN OXIDE POLLUTION ABATEMENT USING CATALYTIC COMBUSTION

G. Russell James, 4 Seymour Pl. West, Armonk, N.Y. 10504

Continuation of Ser. No. 432,780, Jan. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 170,911, Aug. 11, 1971, abandoned. This application Dec. 2, 1975, Ser. No. 637,043

Int. Cl.[2] C01B 53/04

U.S. Cl. 423—239 2 Claims

1. In a nitric acid process in which a waste tail gas stream containing residual nitrogen oxides and oxygen is produced, and in which said waste tail gas stream is catalytically reacted with a gas stream containing a high percentage of hydrogen at elevated temperature whereby said nitrogen oxides and oxygen react with the hydrogen component in said hydrogen-containing gas stream in an exothermic catalytic reaction to produce a treated waste tail gas stream having a diminished content of nitrogen oxides, the improved process for producing said hydrogen-containing gas stream wherein the improvement comprises:

(a) providing a stream of natural gas and a stream of steam,

(b) mixing said natural gas stream with said steam stream to produce a feed steam,

(c) passing said feed stream in parallel through a plurality of externally heated tubes, said tubes containing a nickel-based catalyst, whereby heat is supplied to said feed stream and to said catalyst, so as to react said natural gas and said steam endothermically at elevated temperature to produce a hot gas stream containing a high percentage of hydrogen,

(d) mixing the hot hydrogen-containing gas stream produced according to step (c) with colder waste tail gas from a nitric acid process, whereby said colder waste tail gas is heated to, and a gas mixture is produced at, a temperature above 450° F. and above the initiation temperature for the exothermic catalytic reaction of step (e),

(e) passing the gas mixture produced according to step (d) radially inwards through an annular bed of catalyst for said exothermic catalytic reaction disposed within said vessel external to said tubes, whereby both gas stream pressure drop and temperature of the wall of said vessel are minimized, and whereby the exothermic catalytic reaction takes place and a hot treated waste tail gas stream is produced, and

(f) cooling the hot treated waste tail gas stream of step (e) by passing the hot treated waste tail gas stream external to said tubes and in indirect heat exchange with said feed stream and nickel-based catalyst of step (c), whereby a cooled treated waste tail gas stream is produced.

4,198,380

ABSORPTION OF SULFUR OXIDES FROM HOT GASES

Arthur L. Kohl, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 24, 1975, Ser. No. 634,726
Int. Cl.[2] C01B *17/00*
U.S. Cl. 423—242 10 Claims

1. A continuous process for removing sulfur oxides from hot gases containing the same comprising the steps of:

(a) introducing the hot gas containing sulfur oxides into a first zone;

(b) introducing a finely dispersed aqueous scrubbing medium containing an absorbent selected from the group consisting of alkali metal carbonates, alkali metal bicarbonates and mixtures thereof into the first zone, said aqueous scrubbing medium being introduced in an amount to provide an equivalent weight ratio of absorbent to sulfur oxide of about 0.8:1;

(c) contacting the hot gas with said aqueous scrubbing medium and forming (1) a substantially water-unsaturated gaseous reaction product of reduced sulfur oxide content and (2) a dry powder reaction product containing alkali metal sulfites and sulfates, substantially free of unreacted absorbent;

(d) transferring the gaseous reaction products from the first zone into a second zone;

(e) contacting the gas in the second zone with an aqueous scrubbing medium containing an absorbent selected from the group consisting of alkali metal carbonates, alkali metal bicarbonates and mixtures thereof and forming an aqueous solution of alkali metal sulfates, sulfites and unreacted absorbent, and a gaseous reaction product substantially free of sulfur oxides, said absorbent being provided in an equivalent weight ratio of absorbent to sulfur oxide contained in the gas introduced into the second zone of at least 1.5:1; and

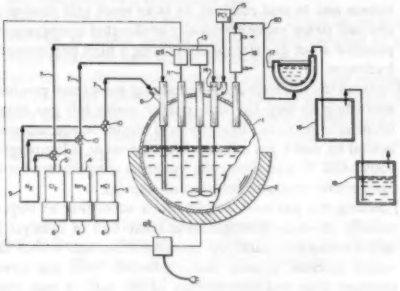
(f) recovering a portion of the aqueous solution formed in the second zone and using it as at least a part of the aqueous scrubbing medium introduced into the first zone.

4,198,381

PROCESS FOR PREPARING LOW MOLECULAR WEIGHT LINEAR PHOSPHONITRILIC CHLORIDE OLIGOMERS

Edwin D. Hornbaker, and Hsueh M. Li, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Aug. 21, 1978, Ser. No. 935,629
Int. Cl.[2] C01B *25/10*
U.S. Cl. 423—300 8 Claims



1. A method for the preparation of phosphonitrilic chloride mixture containing a high proportion of linear oligomers which comprises

(a) introducing phosphorus trichloride and chlorine into a substantially anhydrous, inert liquid reaction medium, and then

(b) introducing phosphorus trichloride, chlorine and ammonia concurrently into said reaction medium while maintaining said medium at a temperature within the range of from about 100° C. to about 140° C., the rates at which the phosphorus trichloride, chlorine and ammonia are introduced being regulated such that:

(i) the molar ratio of phosphorus, trichloride to chlorine introduced during (a) is from 0.9 to 1.1, and

(ii) with respect to the first half of the total amount of ammonia being used, the average molar ratio of phosphorus trichloride to ammonia including the phosphorus trichloride of (a) is kept above two, and

(iii) with respect to the total amount of ammonia being used, the average molar ratio of phosphorus trichloride to ammonia including the phosphorus trichloride of (a) is within the range of from about 1.2 to about 1.5.

4,198,382

NOVEL CARBON-CARBON COMPOSITE MATERIAL AND METHOD FOR ITS PRODUCTION

Hironori Matsui, Hirakata, Japan, assignor to Kanebo Ltd., Tokyo, Japan

Filed Sep. 1, 1978, Ser. No. 938,920
Claims priority, application Japan, Sep. 9, 1977, 52/109078
Int. Cl.[2] C01B *31/02*
U.S. Cl. 423—445 19 Claims

1. A carbon-carbon composite material consisting of a matrix carbon and a fibrous reinforcing carbon, said matrix carbon consisting substantially of optically anisotropic carbon and said fibrous reinforcing carbon consisting substantially of optically isotropic carbon, and said matrix carbon and fibrous reinforcing carbon forming an interface without an intervening third material, wherein said composite material has a fracture surface showing a uniform vitreous light reflection produced by the method of claim 9.

9. A method for producing a carbon-carbon composite material consisting of a matrix carbon and a fibrous reinforcing carbon, which comprises heat-treating cured novolac fibers at a temperature of from 250° C. to less than 500° C. in a non-oxidizing atmosphere; shaping a resinous composition consisting of 30 to 90% by weight of the resulting heat-treated novolac fibers and 10 to 70% by weight, as the solids content after curing, of a phenolic resin; curing the shaped product; heating the cured product in a non-oxidizing atmosphere to at least 800° C. in such a manner that at least within a temperature range of 200° to 500° C., the heating is carried out at a rate of not more than 60° C. per hour; and firing the product at the final temperature reached.

4,198,383

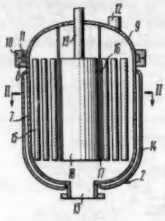
APPARATUS FOR CONTINUOUS PREPARATION OF ACRYLONITRILEBUTADIENSTYRENE COPOLYMER

Vitaly V. Konsetov, prospekt Energetikov, 34, kv. 55; Galina I. Kozlova, prospekt Kosmonavtov, 52, korpus 6, kv. 55; Valentina G. Orlova, prospekt Metallistov, 69, kv. 7; Ljudmila F. Dokukina, Novocherkassky prospekt, 32/15, kv. 261; Galina M. Deryagina, prospekt Energetikov, 34, kv. 69; Tatyana N. Pavlova, Kharkovskaya ulitsa, 8, kv. 4; Eleonora A. Gavrichenkova, ulitsa Mayakovskogo, 11, kv. 74, and Natalia P. Vasilieva, ulitsa Stasovoi, 6, kv. 24, all of Leningrad, U.S.S.R.

Filed Aug. 21, 1978, Ser. No. 935,086
Int. Cl.[2] B01J *1/00*
U.S. Cl. 422—134 1 Claim

1. An apparatus for continuous preparation of acrylonitrilebutadienestyrene copolymer consisting of: means for providing a solution of rubber in a mixture of the monomers, viz, styrene and acrylonitrile; a pre-polymerization reactor for the preparation of the reaction mass from the rubber solution in the monomers; a reactor for polymerization of the reaction mass; a reactor for the final polymerization of the reaction mass; a vessel for the removal of the non-polymerized monomers from the reaction mass to give a melt of an acrylonitrilebutadienestyrene copolymer; said said means for providing solution,

pre-polymerization reactor, polymerization reactor, final-polymerization reactor and the vessel for the removal of the non-polymerized monomers are on-stream mounted and communicating with each other by means of pipelines; said polymerization reactor consisting of a shell; heat-exchanging members located inside said shell; a means located in said shell for stirring the reaction mass; said means for stirring having: an elongated tube fixedly mounted coaxially with said shell and extending substantially the length thereof; at least one slot provided in said tube and extending over the entire length thereof; a stirring member located in said tube coaxially therewith and made in the form of a closed rotably mounted cylinder and extending the length thereof; a driving means for setting said stirring member into rotation; the internal surface of said shell and outer surface of said tube forming a cavity therebetween; at least one partition positioned between the internal surface of said shell and said stirring member and passing through the middle of said at least one slot along the length thereof and intended for division of said cavity into a suction zone and a pumping zone to effect circulation of the reaction mass in said cavity, wherefore during rotation of said stirring member a repeated circulation of the reaction mass in said cavity is effected in planes perpendicular to the longitudinal axis of said shell.



4,198,384

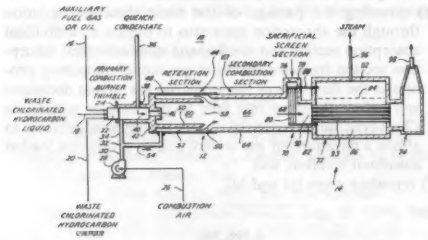
MULTISTAGE INCINERATION OF HALOGENATED HYDROCARBON CONTAINING WASTE STREAMS

Sam P. Robinson, Houston, Tex., assignor to James G. Brown & Associates, Inc., Houston, Tex.

Continuation of Ser. No. 644,553, Dec. 29, 1975, abandoned. This application Nov. 11, 1977, Ser. No. 850,641

Int. Cl.[2] C01B 7/18, 7/00, 7/22

U.S. Cl. 423—488 **10 Claims**



1. A method of incinerating halogenated hydrocarbon containing waste streams comprising:

A. reacting the halogenated hydrocarbon containing waste streams with from 85% to 105% of the stoichiometric amount of air required for complete combustion of said material at between 2800° F. and 3200° F. for an initial reaction period of between 0.01 seconds and 0.15 seconds to produce a first intermediate mixture;

B. adding sufficient water to said first intermediate mixture to lower the reaction temperature to between 2300° F. and 2600° F.;

C. reacting said first cooled intermediate mixture at between 2300° F. and 2600° F. for a second reaction period of between 0.15 and 0.35 seconds to produce a second intermediate mixture;

D. adding sufficient air to said intermediate mixture to reduce its temperature to between 1800° F. and 2300° F.;

E. reacting said cooled second intermediate mixture at between 1800° F. and 2300° F. for between 0.25 and 0.5 seconds with a 10% to 60% stoichiometric excess of air relative to the initial feed of said waste streams in step A required for complete combustion of said cooled second intermediate mixture to produce a final hydrogen halide containing product gas.

4,198,385

REDUCTION OF SODIUM SULFATE TO SODIUM SULFIDE

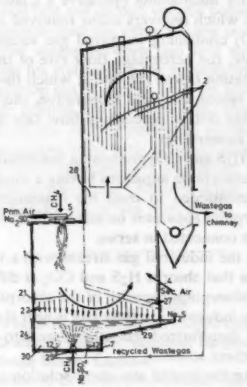
Erich Feldbaumer; Heinz Loquenz, and Alfred Sandri, all of Graz, Austria, assignors to Waagner-Biro Aktiengesellschaft and Chemiefaser Lenzing Aktiengesellschaft, both of, Austria

Filed Sep. 2, 1977, Ser. No. 830,069

Claims priority, application Austria, Sep. 7, 1976, 6603/76; Sep. 16, 1976, 6864/76

Int. Cl.[2] C01B 17/00

U.S. Cl. 423—566 **9 Claims**



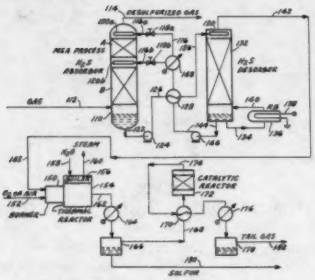
1. A method for substantially completely reducing Na_2SO_4 to Na_2S, comprising the steps of introducing Na_2SO_4 in finely divided form into a primary combustion chamber having a reducing atmosphere maintained at a temperature greater than the melting temperature of Na_2S thereby in a primary reduction step partially converting the Na_2SO_4 to Na_2S, simultaneously forming a melt of Na_2SO_4 and Na_2S at the bottom of said chamber and producing exhaust gases which are still reducing, and directing said reducing exhaust gases out of said combustion chamber, combusting said reducing exhaust gases to form a second gas which is inert with respect to Na_2SO_4 and Na_2S, cooling the thus obtained inert second gas, passing a portion of said cooled inert second gas through said melt of Na_2SO_4 and Na_2S and supplying a reducing agent from a source other than the primary reduction step into the bottom of said melt to agitate said melt and to reduce therein in a secondary reduction step any remaining Na_2SO_4 to Na_2S.

4,198,386

SELECTIVE REMOVAL OF A GASEOUS COMPONENT FROM A MULTI-COMPONENT GAS STREAM

Joseph A. Laslo; Mehmet O. Tarhan; Charles W. Sheldrake, all of Bethlehem, and Daniel Kwasnoski, Hellertown, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Feb. 14, 1978, Ser. No. 877,634
Int. Cl.[2] C01B *17/04;* B01D *53/34*
U.S. Cl. 423—574 R 8 Claims



1. A method for maintaining operative a Claus-type sulfur recovery system which recovers sulfur removed as H_2S from an H_2S and CO_2 containing industrial gas stream having a variable flow rate, the percentage flow rate of the industrial gas stream decreasing below the rate at which the Claus-type sulfur recovery system becomes inoperative, this percentage flow rate being the critical percentage flow rate of the industrial gas stream, comprising:

(a) passing an H_2S and CO_2 containing industrial gas stream through an absorption apparatus having a total absorption capacity dimensioned to treat the maximum gas flow, which absorption apparatus includes at least two absorption sections connected in series,

(b) contacting the industrial gas stream with a basic absorbent solution that absorbs H_2S and CO_2 at different rates in the total absorption capacity of the absorption apparatus when the industrial gas flow rate is near the maximum to afford a desulfurized gas stream and to produce a loaded absorbent solution,

(c) regenerating the loaded absorbent solution in a desorption apparatus to desorb th H_2S and CO_2 to yield a foul gas stream,

(d) reacting the foul gas stream in a Claus-type sulfur recovery system to form elemental sulfur,

(e) eleminating the contact of the industrial gas stream with the basic absorbent solution in at least one absorption section when the flow rate of the industrial gas stream decreases to within 10 percentage point of the critical percentage flow rate,

(f) allowing the contact of the industrial gas stream with the basic absorbent solution in the remaining absorption sections the absorption capacity of which as a percentage of the total absorption capacity of the absorption apparatus is within 10 percentage points of the critical percentage flow rate of the industrial gas stream to afford a desulfurized gas stream and to produce a loaded absorbent solution, and

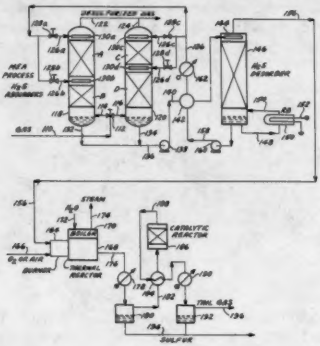
(g) repeating steps (c) and (d).

4,198,387

MAINTAINING THE SELECTIVE REMOVAL OF H_2S FROM A VARIABLY FLOWING GAS STREAM CONTAINING H_2S AND CO_2

Joseph A. Laslo, and John K. Laberteaux, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Feb. 14, 1978, Ser. No. 877,636
Int. Cl.[2] C01B *17/04;* B01D *53/34*
U.S. Cl. 423—574 R 6 Claims



1. A method for maintaining operative a Claus-type sulfur recovery system which recovers sulfur removed as H_2S from an H_2S and CO_2 containing industrial gas stream having a variable flow rate comprising

(a) passing an H_2S and CO_2 containing industrial gas stream through an absorption apparatus having a total absorption capacity dimensioned to treat the maximum gas flow, which absorption apparatus includes two absorption columns connected in parallel, each absorption column comprising at least two individual absorption sections connected in series,

(b) contacting the industrial gas stream with a basic absorbent solution that absorbs H_2S and CO_2 at different rates in the total absorption capacity of the absorption apparatus to afford a desulfurized gas stream and to produce a loaded absorbent solution,

(c) regenerating the loaded absorbent solution in a desorption apparatus to desorb the H_2S and CO_2 to yield a foul gas stream,

(d) reacting the foul gas stream in a Claus-type sulfur recovery system to form elemental sulfur,

(e) directing the passage of the basic absorbent solution through the absorption apparatus to bypass an individual absorption section and to eliminate said individual absorption section from the effective gas-liquid contacting process as the flow rate of the industrial gas stream decreases and before the flow rate falls to that rate at which the Claus-type sulfur recovery system becomes inoperative to afford a desulfurized gas stream and to produce a loaded absorbent solution, and

(f) repeating steps (c) and (d).

4,198,388

SELECTIVE REMOVAL OF H_2S FROM AN H_2S AND CO_2 CONTAINING GAS STREAM

Joseph A. Laslo, Bethlehem, and Daniel Kwasnoski, Hellertown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

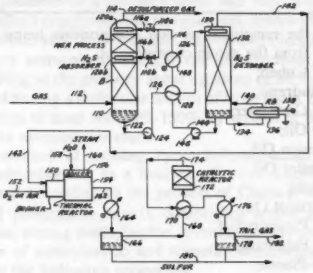
Filed Feb. 14, 1978, Ser. No. 877,639
Int. Cl.[2] C01B *17/04;* B01D *53/34*
U.S. Cl. 423—574 R 12 Claims

1. A method for maintaining operative a Claus-type sulfur recovery system which recovers sulfur removed as H_2S from

an H_2S and CO_2 containing industrial gas stream having a variable flow rate, the percentage flow rate of the industrial gas stream decreasing below the rate at which the Claus-type sulfur recovery system becomes inoperative, this percentage flow rate being the critical percentage flow rate of the industrial gas stream, comprising:

(a) passing an H_2S and CO_2 containing industrial gas stream through an absorption apparatus having a total absorption capacity dimensioned to treat the maximum gas flow, which absorption apparatus includes at least two interconnected absorption sections,

(b) contacting the industrial gas stream with a basic absorbent solution that absorbs H_2S and CO_2 at different rates in the total absorption capacity of the absorption apparatus when the industrial gas flow rate is near the maximum to afford a desulfurized gas stream and to produce a loaded absorbent solution,



(c) regenerating the loaded absorbent solution in a desorption apparatus to desorb the H_2S and CO_2 to yield a foul gas stream,

(d) reacting the foul gas stream in a Claus-type sulfur recovery system to form elemental sulfur,

(e) eliminating the contact of the industrial gas stream with the basic absorbent solution in at least one absorption section when the flow rate of the industrial gas stream decreases to within 10 percentage points of the critical percentage flow rate,

(f) allowing the contact of the industrial gas stream with the basic absorbent solution in the remaining absorption sections the absorption capacity of which as a percentage of the total absorption capacity of the absorption apparatus is within 10 percentage points of the critical percentage flow rate of the industrial gas stream to afford a desulfurized gas stream and to produce a loaded absorbent solution, and

(g) repeating steps (c) and (d).

4,198,389

DETERMINATION OF IMMUNOLOGICALLY ACTIVE MATERIALS AND SYSTEM THEREFORE

Charles Wadsworth, Göteborg, Sweden, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 17, 1977, Ser. No. 825,500

Claims priority, application Sweden, Aug. 20, 1976, 7609263

Int. Cl.[2] **G01N** *21/00, 27/00, 31/02, 33/16*

U.S. Cl. 424—8 **19 Claims**

1. Process for determining an immunologically-active material in a fluid, comprising using an inert gel matrix on a non-reactive support, said inert gel matrix containing an electrolyte and two opposite sides of said gel matrix being connected to an alternating current source means, applying an aliquot of a sample of the fluid onto said gel, covering the area of application with a solution containing an immunologically-specific counter-reactive material, applying an alternating current to said gel matrix, removing the unreacted soluble materials and observing the results of the immunological reaction at the area of application of the sample.

16. System suitable for determining immunologically-active material in a fluid comprising:

(a) an inert gel matrix containing an electrolyte on a non-reactive support;

(b) means for connecting said matrix with a source of alternating current; and

(c) an alternating current source means.

4,198,390

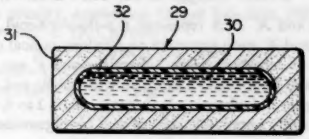
SIMETHICONE ANTACID TABLET

Joseph A. Rider, 10 Charles Dean Rd., Mill Valley, Calif. 94941

Filed Jan. 31, 1979, Ser. No. 7,887

Int. Cl.[2] **A61K** *9/24, 31/695, 33/08, 9/58*

U.S. Cl. 424—21 **9 Claims**



1. A tablet containing simethicone and an antacid, said tablet comprising:

a first volume portions containing said simethicone;

a second volume portion containing said antacid;

each of said first and second volume portions being separate and discrete from the other volume portion;

and barrier means between said first and second volume portions for maintaining the simethicone in said first volume portion out of contact with the antacid in the second volume portion and for preventing migration of ingredients from one volume portion to another;

said simethicone being exterior of any matrix formed by any of the other ingredients in said tablet, the availability of the simethicone for anti-foaming action being independent of the breakdown of any such matrix.

4,198,391

PHARMACEUTICAL COMPOSITIONS

Norman Grainger, London, England, assignor to R. P. Scherer Ltd., Slough Berks, England

Continuation of Ser. No. 596,406, Jul. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 488,695, Jul. 15, 1974, abandoned. This application Sep. 20, 1977, Ser. No. 834,887

Claims priority, application United Kingdom, Jul. 20, 1973, 34804/73

Int. Cl.[2] **A61K** *9/48, 31/705*

U.S. Cl. 424—37 **4 Claims**

1. A cardiotonic dosage unit form comprising a soft elastic gelatin capsule containing about 100–300 milligrams of a liquid solution consisting essentially of (a) about 50–300 micrograms of a digitalis cardiac glycoside selected from digoxin, digitoxin, digitalin, lanatoside C., acetyl digitoxin, acetyl digoxin or methyl digoxin, (b) ethanol, (c) water, said water forming less than about 25% by weight of the total of the water and the ethanol in said solution, the weight ratio of said water and said ethanol to said digitalis cardiac glycoside being about 80:1 or higher, (d) propylene glycol, glycerine or mixtures thereof, and (e) liquid polyethylene glycol, said polyethylene glycol comprising about 80–95% by weight of said solution.

4,198,392
ORAL COMPOSITIONS CONTAINING BIS-BIGUANIDES WITH REDUCED STAINING TENDENCIES

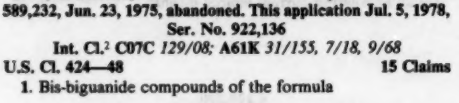
Prem S. Juneja, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 830,226, Sep. 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 670,518, Mar. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 589,232, Jun. 23, 1975, abandoned. This application Jul. 5, 1978, Ser. No. 922,136

Int. Cl.[2] **C07C** *129/08;* **A61K** *31/155, 7/18, 9/68*

U.S. Cl. 424—48 **15 Claims**

1. Bis-biguanide compounds of the formula



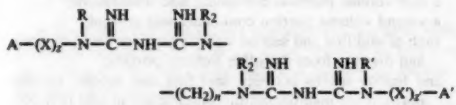
wherein A and A′ each represent a p-fluorophenyl radical; wherein X and X′ each represent an alkylene radical containing from 1 to 3 carbon atoms; wherein z and z′ are each 0; wherein R and R′ are each hydrogen; wherein R_2 and R'_2 are each hydrogen; and wherein n is an integer from 2 to 4, and the pharmaceutically acceptable salts of said bis-biguanides.

12. A chewing gum composition comprising:

(A) a gum base;

(B) from about 0.01% to about 2.0% of flavoring material; and

(C) from about 0.1% to about 2% of an antiplaque agent having the formula:



wherein A and A′ each represent a p-fluorophenyl radical; wherein X and X′ each represent an alkylene radical containing from 1 to 3 carbon atoms; wherein n is an integer from 2 to 4; wherein z and z′ each are 0; wherein R and R′ are hydrogen; and wherein R_2 and R'_2 are each hydrogen; and the pharmaceutically acceptable salts of said antiplaque agents;

said composition being substantially free of metal ion chelating agents and materials which form insoluble salts with the antiplaque agent.

4,198,393
CYCLIC ACETALS OF 2-METHYL-2-PENTENAL AND FOOD FLAVOR USES THEREOF

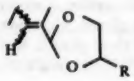
Takao Yoshida, West Long Branch, and Manfred H. Vock, Locust, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 939,911, Sep. 5, 1978, which is a division of Ser. No. 827,253, Aug. 24, 1977. This application Mar. 12, 1979, Ser. No. 19,927

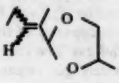
Int. Cl.[2] **A61K** *7/16*

U.S. Cl. 424—49 **1 Claim**

1. A toothpaste comprising a toothpaste base and having intimately admixed therewith a formulation capable of augmenting or enhancing the organoleptic properties of aroma or taste of said toothpaste base comprising (i) from about 0.1% up to about 15% by weight based on the total weight of said flavoring composition of a cyclic acetal of 2-methyl-2-pentenal having the structure:



wherein R is methyl and the wavy lines represent a "cis" or "trans" configuration around the carbon-carbon double bond of said compound of the ethyl moiety with respect to the dioxolane moiety and said compound incorporating in said toothpaste base the following organoleptic properties:

Compound Name	Compound Structure	Organoleptic Properties
2-(1-methyl-1-butenyl) 4-methyl-1,3-dioxolane		Sweet, aniseed, licorice, green, floral and herbal aroma characteristics and sweet, aniseed, licorice, green, floral and herbal flavor characteristics with albedo-like nuance.

and (ii) the remainder of said composition being a material selected from the group consisting of:

Oil of Cubeb;
Phellandrene;
Oil of Coriander;
Clove Oil;
Cardamon Oil;
Spearmint Oil;
Anethole;
Peppermint Oil;
Oil of Pimento leaf;
Oil of Patchouli;
Alpha-Pinene;
Beta-Pinene;
Beta-caryophyllene;
Dihydrocarveol;
Piperonal;
Piperine;
Chavicine;
Piperidine;
Oil of Black Pepper;
Black Pepper Oleoresin;
Capsicum; and
Oil of Nutmeg.

4,198,394
SODIUM DIHYDROGEN PHOSPHATE ENHANCED DENTIFRICE COMPOSITION

Frank R. Faunce, 201 Wilcrest Dr., #946, Houston, Tex. 77042

Continuation-in-part of Ser. No. 927,846, Jul. 25, 1978. This application Feb. 12, 1979, Ser. No. 11,134

Int. Cl.[2] **A61K** *7/18*

U.S. Cl. 424—52 **8 Claims**

1. A fluoride containing dentifrice composition having an acid phosphate enhanced fluoride system that penetrates and alters tooth enamel and is retained well in the enamel crystal latticework, said dentifrice being comprised of:

a water free carrier;

a quantity of an abrasive material from a group including insoluble sodium metaphosphate, dicalcium phosphate dihydrite and insoluble calcium pyrophosphate;

a quantity of sweetening agent from a group consisting essentially of xylitol, sugar and sacharrin;

a flavoring agent from a group consisting essentially of spearmint oil, citrus oils, fruit oils, vanilla oil, chocolate, grape and cinnamon;

a quantity of stannous fluoride, said stannous fluoride compound being in the range of from 0.03% to 0.4% by weight of said dentifrice composition; and

a quantity of sodium dihydrogen phosphate being incorporated within said carrier and adjusting the pH of the dentifrice composition to an acid range from about 2.5 to about 5.5 said sodium dihydrogen phosphate comprising from about 0.03% to about 0.4% by weight of said dentifrice

composition and being capable of altering the crystalline latticework structure of tooth enamel during a toothbrushing sequence and reacting together with said stannous fluoride and providing a caries inhibiting fluorophosphate complex at the tooth surface energized by said sodium dihydrogen phosphate.

4,198,395

NOVEL HYPOCHOLESTEROLEMIC RESIN

Renato De Simone, Salerno, Italy, assignor to Etablissement Viridis, Vaduz, Liechtenstein

Filed May 25, 1977, Ser. No. 800,526

Claims priority, application France, May 25, 1976, 76 15734

Int. Cl.[2] A61K *31/785;* **C08J** *9/20, 9/36*

U.S. Cl. 424—79 **10 Claims**

1. In a method for preparing a microporous anionic resin which comprises treating styrene with a cross-linking monomer in the presence of a porosity agent and with a catalyst initiator to afford copolymerized styrene resin, followed by the introduction into said resin of amino, alkylamino, dialkylamino or quaternary ammonium moieties; the improvement which comprises using as the porosity agent squalene or an hydrogenated steroid having a molecular weight of from about 200–500 in a proportion of from about 80–150% by weight of the total weight of the monomer mixture.

10. The method of treating hypercholesterolemia which comprises administering to a host an effective amount of a resin prepared according to the process of Claim 1 having a cross-linked polystyrene matrix comprising active moieties selected from among methylamino, trimethylammonium or a combination of methylamino and trimethylammonium, characterized by the following properties:

— percentage of cross linking	: 8—20%
— exchange capacity	: 3.9—6 meq/g
— porosity	: 0.4—0.6 cc/g
— average pore diameter	: 150—200 Å
— specific surface area	: 70—100 m^2/g
— real density	: 0.9—1.1 g/cc
— apparent density	: 0.5—0.6 g/cc
— particle size distribution	: 60—80 mesh

4,198,396

DISSOLUTION OF GALLSTONES

Michael C. Seidel, Chalfont, Pa., and Evan H. Crook, Cherry Hill, N.J., assignors to Warren-Teed Laboratories, Inc., Columbus, Ohio

Division of Ser. No. 485,476, Jul. 3, 1974, Pat. No. 3,962,420. This application Dec. 10, 1975, Ser. No. 639,335

The portion of the term of this patent subsequent to Jun. 8, 1993, has been disclaimed.

Int. Cl.[2] A61K *31/74, 31/78*

U.S. Cl. 424—81 **9 Claims**

1. A pharmaceutical composition for dissolving cholesterol gallstones and/or lowering serum cholesterol which comprises subdivided dosages of 500 to 2,000 milligrams of an adsorbent macroreticular resin having a particle size of from 0.1μ to 300μ comprising aromatic ethylenically unsaturated monomers, aliphatic ethylenically unsaturated monomers or mixtures thereof in a pharmaceutically acceptable carrier.

4,198,397

ARTHROPODICIDAL GRANULAR FORMULATION

Christopher Gillings, Linton, and John H. Palmer, Saffron Walden, both of England, assignors to Fisons Limited, London, England

Filed Feb. 14, 1978, Ser. No. 877,812

Claims priority, application United Kingdom, Feb. 16, 1977, 6366/77; Mar. 17, 1977, 11392/77; Sep. 27, 1977, 40111/77

Int. Cl.[2] A01N *9/28*

U.S. Cl. 424—83 **12 Claims**

1. In an arthropodicidal granular material comprising 2,2-dimethyl-1,3-benzodioxol-4-yl N-methyl-carbamate as arthropodicide and comprising base granules coated on their surface with a sticker layer, said sticker layer being in turn coated with a layer of said arthropodicide, said arthropodicide layer in turn being coated with flowability agent which is a highly absorptive powder filler in a sufficient amount to ensure free flowability of the granules, the improvement according to which the sticker comprises a hydrocarbon having a viscosity of 20 to 4,000 centipoises.

4,198,398

ENKEPHALIN ANALOGUES

Derek Hudson, 23A Elm Rd., Wembley, Middlesex; Robert Sharpe, 99 King House, Ducane Rd., London W12 OHS; Michael Szelke, 10 North Drive, Ruislip, Middlesex; all of England

Filed Jul. 10, 1978, Ser. No. 923,478

Claims priority, application United Kingdom, Jul. 12, 1977, 29207/77; Dec. 8, 1977, 51159/77

Int. Cl.[2] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **26 Claims**

1. Compounds having the general formula

R—Tyr—X—Gly—B—Y—Z

where

(a) —X is a Gly or any D-amino acid residue
—B is a Phe or N-methyl Phe residue
—Y is Leu, Met (as such or in the form of its sulphoxide), Pro, or Hypro, or formal derivatives thereof in which the carbonyl oxygen of the terminal carboxyl group is replaced by hydrogen atoms
—Z is NHR or OR

(b) The peptide link between one or more of the residues is represented by a group or groups the same or different selected from dimethylene, methylene-imino and keto-methylene groups.

(c) R is hydrogen or methyl, ethyl, propyl, cyclopropyl, butyl, allyl or other protective aliphatic group.

4,198,399

Patent Not Issued For This Number

4,198,400

WATER-RECONSTITUTABLE JUICE AND SOUP COMPOSITIONS

Myron A. Biegler, 2 Palo Alto Sq., Palo Alto, Calif. 94304

Filed Jun. 12, 1978, Ser. No. 914,430

Int. Cl.[2] A61K *31/70, 31/725*

U.S. Cl. 424—180 **14 Claims**

1. In a water-reconstitutable juice composition which comprises flavoring and coloring agents, the improvement, which comprises; the presence of a proportion of dietary fibers, which comprises from 10 to 90 parts by weight of a protopectin and from 10 to 90 parts by weight of a cellulosic dietary fiber which is coated to render the cellulose fiber hydrophobic.

8. In a water-reconstitutable soup composition which comprises flavoring and coloring agents, the improvement, which comprises; the presence of a proportion of dietary fibers, which comprises, from 10 to 90 parts by weight of a protopectin and from 10 to 90 parts by weight of a cellulosic dietary fiber which is coated to render the cellulosic fiber hydrophobic.

4,198,401

ACTIVE PLANT EXTRACTS OF HYPOXIDACEAE AND THEIR USE

Karl H. Pegel, King George V Ave., Durban Natal, South Africa

Division of Ser. No. 856,507, Dec. 1, 1977, Pat. No. 4,160,860. This application Mar. 1, 1979, Ser. No. 16,387

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1976, 2659465

Int. Cl.[2] A61K *35/78, 31/705*

U.S. Cl. 424—195 **13 Claims**

1. A process of combatting a human illness selected from the group consisting of inflammatory illness, gout and benign hypertrophy comprising administering to a patient suffering therefrom an effective amount of an extract of plant material of the family Hypoxidaceae prepared by a process comprising the steps of heating the plant material to at least 60° C. to deactivate the steroline specific degrative enzymes and thereafter extracting at 0° to 30° C. with aqueous alcohol containing 30–75 volume percent ethanol for 1–15 days.

12. A pharmaceutical product comprising an extract of plant material of the family Hypoxidaceae prepared by a process comprising the steps of heating the plant material to at least 60° C. to deactivate the steroline specific degrative enzymes and thereafter extracting at 0° to 30° C. with aqueous alcohol containing 30–75 volume percent ethanol for 1–15 days together with a pharmaceutically acceptable carrier.

4,198,402

ANTIPHLOGISTIC COMPOSITION OF PHENYLBUTOZONE AND ALKALI SALICYLATE AND METHOD OF TREATMENT

Elemer Ezer; Laszlo Szporny; Lilla Forgach; Eva Palosi; Eszter Cholnoky; Egon Karpati; Gyorgy Hajos; Gyozo Hortobagyi, and Katalin Gidai, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Division of Ser. No. 641,771, Dec. 17, 1975, abandoned. This application Apr. 3, 1978, Ser. No. 892,918

Int. Cl.[2] A61K *31/62*

U.S. Cl. 424—232 **4 Claims**

1. A pharmaceutical composition containing as the active ingredient a combination of one part by weight of phenylbutazone or a pharmaceutically acceptable salt thereof and 0.2 to 50 parts by weight of an alkali salicylate in effective amounts to reduce ulcer-lesion formation and at the same time being antiflammatory.

3. A method of treating an animal subject for an inflammatory condition without ulcerogenesis and for reducing the tendency to ulcer-lesion formation in antiflammatory treatments with ulcerogenic compounds which comprises administering to said subject an effective amount of a combination of one part by weight of phenylbutazone or a pharmaceutically acceptable salt thereof and 0.2 to 50 parts by weight of an alkali-metal salicylate.

4,198,403

17 BETA-THIOCARBOXYLIC ACID ESTERS OF 4-HALO-3-OXOANDROST-4-ENES

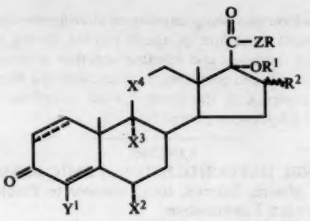
Francisco S. Alvarez, Sunnyvale, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 5, 1978, Ser. No. 893,390

Int. Cl.[2] C07J *7/00;* **A61K** *31/58*

U.S. Cl. 424—241 **36 Claims**

1. A compound chosen from those represented by the formula



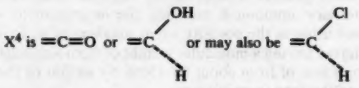
wherein

Z is sulfur

X^1 is fluoro, chloro or bromo;

X^2 is fluoro, chloro or hydrogen;

X^3 is fluoro, chloro, bromo or hydrogen;



when

X^3 is chloro;

R is alkyl of 1 through 6 carbon atoms or phenyl or benzyl optionally substituted with one substituent on the phenyl ring chosen from the group consisting of alkyl of 1 through 4 carbon atoms, alkoxy of 1 through 4 crbon atoms and halo;

R^1 is hydrogen or alkanoyl of 2 through 6 carbon atoms when R^2 is hydrogen, alpha-methyl or beta methyl, or OR^1 and R^2 together are isopropylidenedioxy; and

the solid and broken lines between C-1 and C-2 represent a double or a single bond.

23. A pharmaceutical composition for treating inflammation in a mammal which comprises, as the active ingredient, at least one compound of claim 1 in combination with at least one pharmaceutical excipient.

4,198,404

6 ALPHA, 6 BETA-DIFLUORO-ETIANIC ACID DERIVATIVES

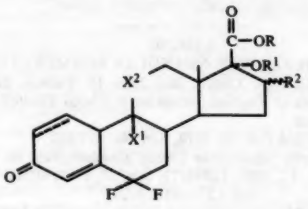
John A. Edwards, Los Altos, and Francisco S. Alvarez, Sunnyvale, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 5, 1978, Ser. No. 893,386

Int. Cl.[2] A61K *31/56*

U.S. Cl. 424—243 **8 Claims**

1. A compound chosen from those represented by the formula



(I)

wherein

X^1 is chloro;

X^2 is

R is hydrogen, alkyl or 1 through 6 carbon atoms optionally substituted with one of halo, phenyl or benzyl ring chosen from the group consisting of alkyl of 1 through 4 carbon atoms, alkoxy of 1 through 4 carbon atoms and halo;

R^1 is hydrogen or alkanoyl of 2 through 6 carbon atoms;

R^2 is hydrogen, alpha-methyl or beta-methyl; and

the broken line between C-1 and C-2 represents a double or a single bond.

8. A process for treating an inflamed condition in a mammal which comprises administering an effective amount of a compound of claim 1 to said mammal.

4,198,405

PROSTAGLANDINE DERIVATIVES

Satoru Enomoto, Fujisawa; Kiro Asano; Humio Tamura, both of Kukizaki, and Hiromitsu Tanaka, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

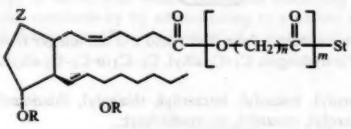
Filed Jan. 5, 1979, Ser. No. 1,269

Claims priority, application Japan, Jan. 31, 1978, 53/9652; Aug. 29, 1978, 53/104434

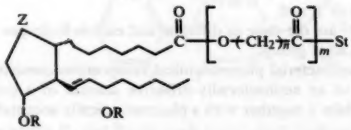
Int. Cl.[2] C07J *51/00;* A61K *31/56*

U.S. Cl. 424—242 11 Claims

1. Prostaglandin derivatives having the formula (I) or (I')

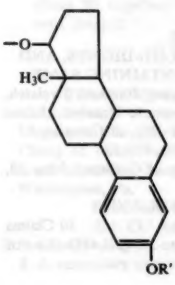


(I)



(I')

wherein, R is hydrogen atom or acetyl group; Z is —OR or =O; n is 1 or 2 and m is 0, 1 or 2, and St is selected from the group consisting of the groups having the formula (II) to (IX)



(II)

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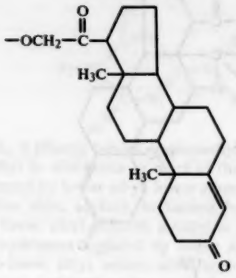
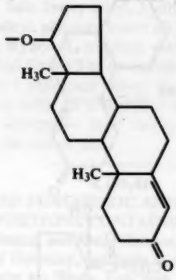
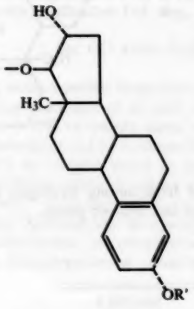


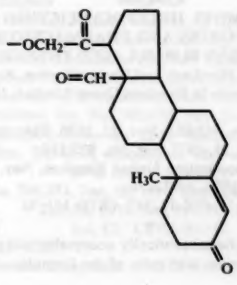
(III)



(IV)



(V)



(VI)

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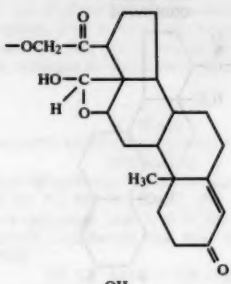
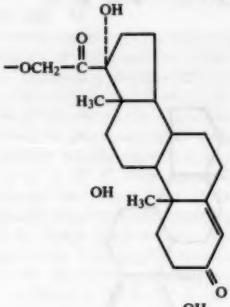
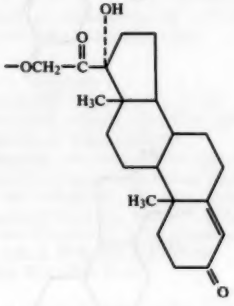


(VIII)



(IX)



wherein R′ is selected from among hydrogen atom, acetyl group, propionyl group and benzoyl group.

4,198,406

CARBAMOYL HETEROCYCLICTHIO CEPHALOSPORINS AND PHARMACEUTICAL COMPOSITIONS FORMULATED THEREWITH

Kenneth D. Hardy, Horsham, and George Burton, Sutton, both of England, assignors to Beecham Group Limited, Great Britain

Division of Ser. No. 743,852, Nov. 22, 1976. This application Sep. 21, 1977, Ser. No. 835,218

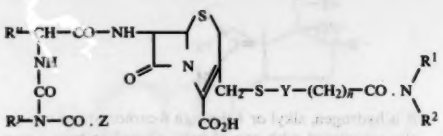
Claims priority, application United Kingdom, Nov. 27, 1975, 48719/75; Apr. 13, 1976, 14952/76

Int. Cl.[2] A61K *31/545*; C07D *501/36*

U.S. Cl. 424—246 **19 Claims**

1. A compound pharmaceutically acceptable salt or in vivo hydrolysable carboxylic acid ester of the formula:

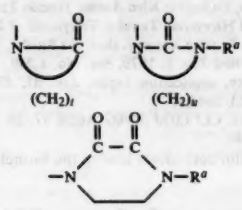
(VII)



wherein R^u is furyl, thienyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cyclobutenyl, cyclopentenyl, cyclohexenyl or cyclohexa-1,4-dienyl, or phenyl, or phenyl substituted in the 4-position with hydroxy, or in the 3,4-positions with dihydroxy or by 3-halogen,-4-hydroxy, mono-nitro, lower alkyl, lower alkoxy, amino or carboxyl;

R^v is hydrogen, lower alkyl or benzyl;

Z is methyl, ethyl, n- or iso-propyl, n-, sec- or tertbutyl, prop-2-enyl, but-2-enyl, benzyl, 2-phenylethyl, 3-phenylpropyl, p-chlorobenzyl, 2-(p-chlorophenyl)-ethyl, 2-phenylethenyl, 2-(p-nitrophenyl)ethenyl, 2-(p-chlorophenyl) ethenyl, phenyl, 2-methoxyphenyl, 2-chlorophenyl, 2-methoxyphenyl, 3,4,5-trimethoxyphenyl, 4-nitrophenyl, 2-methylphenyl, 4-methylphenyl, furyl, thienyl, or R^v and Z together with the carbon and nitrogen atoms to which they are attached form a 5-, 6- or 7-membered ring selected from



in which t is an integer from 3 to 5 and u is the integer from 2 to 4 and R^a is hydrogen, C_1–C_3 alkyl, C_1–C_3 or C_1–C_3 alkylsulphonyl;

Y is diazolyl, triazolyl, tetrazolyl, thiazolyl, thiadiazolyl, thiatriazolyl, oxazolyl, or oxadiazolyl;

n is zero or 1, and

R^1 and R^2 are the same or different and each is hydrogen or a C_{1-6} alkyl group.

17. An antibacterial pharmaceutical composition consisting essentially of an antibacterially effective amount of a compound of claim 1 together with a pharmaceutically acceptable carrier.

4,198,407

SUBSTITUTED 2-PHENYL-1,2,4-TRIAZINE-3,5(2H,4H)-DIONES, AND COCCIDIOSTATIC AGENTS CONTAINING SAME

Manfred Rosner, Eppstein, and Wolfgang Raether, Dreieich, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

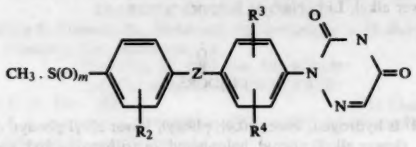
Filed May 16, 1978, Ser. No. 906,638

Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722537

Int. Cl.[2] C07D *253/06*; A61K *31/53*

U.S. Cl. 424—249 **10 Claims**

1. A substituted 2-phenyl-1,2,4-triazine-3,5-(2H,4H)-dione of the formula:



wherein:

R^2 is hydrogen or methyl,

R^3 and R^4 are chlorine,

Z is oxygen, sulfur, or SO, and

m is 0 or 1,

as well as the salts of these compounds with physiologically acceptable bases.

9. A composition useful in the treatment of coccidiosis comprising a pharmaceutically acceptable carrier and an effective amount of a compound as defined in claim 1.

10. A method of treating protozoal diseases by administering to a patient an effective amount of a compound as claimed in claim 1.

4,198,408

METHOD FOR BLOCKING HIGH FREQUENCY NERVE STIMULATION

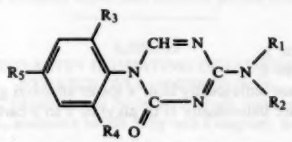
George A. Condouris, Glen Ridge, N.J.; John Yelnosky, Warrington, Pa.; Richard L. Riley, North Wales, Pa.; Chong M. Won, Warrington, Pa.; George H. Douglas, Malvern, Pa., and William L. Studt, Harleysville, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Nov. 13, 1978, Ser. No. 959,858

Int. Cl.[2] A61K *31/53*

U.S. Cl. 424—249 35 Claims

1. A method for treating physiological disorders in mammalian species characterized by aberrant high frequency discharge of nerve fiber which comprises modifying the nerve inpulse conductivity by administering to a patient in need of such therapy an effective amount of a compound of the formula:



wherein R_1 and R_2 are each lower alkyl, hydrogen aralkyl, hydroxy lower alkyl or lower alkoxy;

R_3 and R_4 are each separately lower alkyl of 1 to 6 carbon atoms or halo and R_5 is hydrogen, halo, lower alkyl, lower alkenyl, lower alkoxy or hydroxy lower alkyl; with the proviso that the total number of carbon atoms in R_1, R_2, R_3 and R_4 taken together is at least four and no more than about 20; together with the pharmaceutically acceptable salts thereof.

4,198,409

TRIAZINONES FOR VETERINARY USE

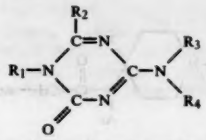
John Yelnosky, Warrington; George H. Douglas, Malvern; Ghulam N. Mir, Buckingham; Dahyabhai M. Patel, Ambler; Chong M. Won, Warrington, and Ronald L. Alioto, Havertown, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Nov. 13, 1978, Ser. No. 959,859

Int. Cl.[2] A61K *31/53, 31/54, 31/535*

U.S. Cl. 424—249 16 Claims

1. A veterinary composition suitable for treating diarrhea in animals comprising an effective amount of a compound of the formula:



wherein R_1 is phenyl, benzyl or phenethyl; or phenyl, benzyl or phenethyl in which one or more of the phenyl hydrogens are substituted by lower alkyl, lower alkoxy, halo, halo-lower alkyl, amino, nitro, acyloxy, acylamino, hydroxy, cyano, carboxyl, or lower alkyl sulfonyl; pyridyl or pyridyl having one or more hydrogens replaced by lower alkyl, lower alkoxy, halo, halo-lower alkyl, amino, nitro, acyloxy, acylamino, hydroxy, cyano, carboxyl, or lower alkyl sulfonyl; R_2 is hydrogen or lower alkyl, and R_3 and R_4 are each independently selected from the group consisting of hydrogen, hydroxyl, lower alkanoyl, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, halo-lower alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl, phenoxy lower alkyl, di-lower alkyl-amino lower alkyl or R_3 and R_4 together with the nitrogen to which they are attached form a 5 or 6 membered nitrogen heterocycle containing 0 to 1 additional hetero atoms which may be nitrogen, oxygen, or sulfur or a non-toxic salt thereof in combination with an acceptable food carrier for administering the compound in the animal diet.

4,198,410

LIQUID FUNGITOXIC AND ACARICIDAL COMPOSITIONS CONTAINING TRIFORINE

Walter Ost, Bingen, and Klaus Thomas, Gau-Algesheim, both of Fed. Rep. of Germany, assignors to Celamerck GmbH & Co. KG, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 844,594, Oct. 25, 1977, abandoned, which is a continuation of Ser. No. 686,174, May 13, 1976, abandoned. This application May 8, 1978, Ser. No. 903,576

Claims priority, application Fed. Rep. of Germany, May 14, 1975, 2521384

Int. Cl.[2] A01N *9/22*

U.S. Cl. 424—250 7 Claims

1. A liquid, water-miscible fungicidal and acaricidal composition consisting essentially of an inert solvent medium, from about 3 to about 30% by weight, based on the total weight, of N,N'-bis-(1-formamido-2,2,2-trichloroethyl)-piperazine, and from 5 to 45% by weight, based on the total weight, of an alkylbenzenesulfonic acid salt whose cation is Ca^{++}, Li^+, tert. $C_4H_9—NH_3^+$ or an ammonium ion which is derived from dimethylamine, diethylamine, di-n-propylamine, diisopropylamine, di-sec.butylamine, trimethylamine, triethylamine, tri-n-propylamine, triisopropylamine or tert.butylamine.

4,198,411

N-ARYL-N-(1-L-4-PIPERIDINYL)-ARYLACEYTAMIDES

Stefan Sanczuk, Vosselaar, and Hubert K. F. Hermans, Gierle, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 795,669, May 11, 1977, Pat. No. 4,126,689, which is a continuation-in-part of Ser. No. 713,756, Aug. 12, 1976, abandoned, Division of Ser. No. 700,694, Jun. 28, 1976, abandoned, Ser. No. 700,638, Jun. 28, 1976, abandoned, Ser. No. 700,637, Jun. 28, 1976, abandoned, Ser. No. 700,636, Jun. 28, 1976, abandoned, Ser. No. 700,635, Jun. 28, 1976, abandoned. Ser. No. 700,352, June 28, 1976, abandoned, and Ser. No. 700,351, Jun. 28, 1976, abandoned. This application Jul. 13, 1978, Ser. No. 924,531

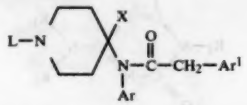
and Ser. No. 700,351, Jun. 28, 1976, abandoned. This application Jul. 13, 1978, Ser. No. 924,531

Int. Cl.[2] C07D *401/02*

U.S. Cl. 424—251 3 Claims

1. A chemical compound selected from the group consisting

of an N-aryl-N-(4-piperidinyl)arylacetamide having the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

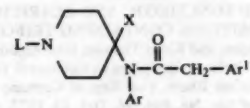
L is a member selected from the group consisting of hydrogen, cycloalkyl-lower alkyl and lower alkenyl, said cycloalkyl having 3 to 6 carbon atoms;

Ar is a member selected from the group consisting of pyridinyl and 2-pyrimidinyl;

Ar^1 is a member selected from the group consisting of phenyl, mono- and di-substituted phenyl, wherein each substituent in said mono- and di-substituted phenyl is independently selected from the group consisting of halo, lower alkyl, hydroxy and lower alkyloxy; and

X is a member selected from the group consisting of hydrogen, lower alkyloxycarbonyl and lower alkyloxymethyl.

3. A method of treating cardiac arrhythmia which comprises the systemic administration to warm-blooded animals of an effective anti-arrhythmic amount of a chemical compound selected from the group consisting of an N-aryl-N-(4-piperidinyl)arylacetamide having the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

L is a member selected from the group consisting of hydrogen, cycloalkyllower alkyl and lower alkenyl, said cycloalkyl having 3 to 6 carbon atoms;

Ar is a member selected from the group consisting of pyridinyl and 2-pyrimidinyl;

Ar^1 is a member selected from the group consisting of phenyl, mono- and di-substituted phenyl wherein each substitutent in said mono- and di-substituted phenyl is independently selected from the group consisting of halo, lower alkyl, hydroxy and lower alkyloxy; and

X is a member selected from the group consisting of hydrogen, lower alkyloxycarbonyl and lower alkyloxymethyl.

4,198,412

PYRAZOLO [1,5-c] QUINAZOLINE DERIVATIVES AND THEIR USE IN TREATING ALLERGIC CONDITIONS

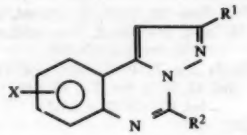
B. Richard Vogt, Yardley, Pa., and Ligaya M. Simpkins, Allentown, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 13, 1978, Ser. No. 969,642

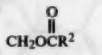
Int. Cl.[2] A61K *31/505;* **C07D** *487/14, 231/12*

U.S. Cl. 424—251 **18 Claims**

1. A compound of the structure



wherein R^1 is carboxyl; hydroxymethyl; CO_2R^3 wherein R^3 is lower alkyl, Li^+, Na^+ or K^+; or



R^2 is hydrogen, lower alkyl, phenyl, lower alkyl phenyl, di (lower alkyl) phenyl, halophenyl, or trifluoromethyl; and X is hydrogen, lower alkyl, lower alkoxy, halogen or trifluoromethyl.

17. A pharmaceutical composition for use in treating allergic conditions comprising a compound as defined in claim 1 and a pharmaceutically acceptable carrier therefor.

18. A method for treating allergic conditions in mammals, which comprises administering to the mammalian host a therapeutic amount of a compound as defined in claim 1.

4,198,413

AMINO ACID ESTERS

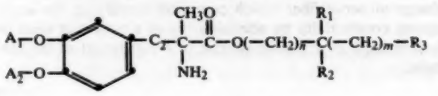
Walfred S. Saari, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 851,552, Nov. 14, 1977, Pat. No. 4,143,146, which is a division of Ser. No. 668,021, Mar. 18, 1976, Pat. No. 4,058,530, which is a division of Ser. No. 482,102, Jun. 24, 1974, Pat. No. 3,983,138, which is a continuation-in-part of Ser. No. 400,609, Sep. 25, 1973, abandoned. This application Jul. 6, 1978, Ser. No. 922,269

Int. Cl.[2] A61K *31/445, 31/38, 31/40;* **C07D** *275/06*

U.S. Cl. 424—256 **19 Claims**

1. A compound of the formula



wherein

n is 0, 1, 2 or 3;

m is 0, 1, 2 or 3;

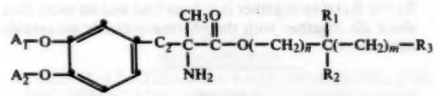
A_1 and A_2 are individually H or a lower alkanoyl group;

R_1 and R_2 are individually H or alkyl or 1 to 3 carbon atoms and;

R_3 is phthalimido, naphthalimido or 1,2 benzisothiazole-3(2H)-one-1,1-dioxide

or a pharmaceutically acceptable acid addition salt thereof.

7. A method of treating hypertension in a hypertensive animal which comprises administering to the animal a therapeutically effective amount of a compound of the formula



wherein

n is 0, 1, 2 or 3;

m is 0, 1, 2 or 3;

A_1 and A_2 are individually H or a lower alkanoyl group;

R_1 and R_2 are individually H or alkyl of 1 to 3 carbon atoms and;

R_3 is phthalimido, naphthalimido or 1,2-benzisothiazole-3(2H)-one-1,1-dioxide

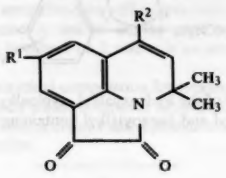
or a pharmaceutically acceptable acid additon salt thereof.

4,198,414
COMPOUNDS AND METHODS FOR TREATING DIABETIC COMPLICATIONS

Harry R. Munson, Jr., Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

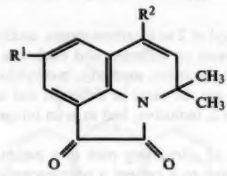
Filed Dec. 29, 1977, Ser. No. 865,480
Int. Cl.[2] A61K *31/40*; C07D *209/60*
U.S. Cl. 424—258 12 Claims

1. A compound selected from 4H-pyrrolo[3,2,1-ij]quinoline-1,2-diones having the formula:



wherein;
R^1 is hydrogen or methyl, and
R^2 is methyl or phenyl.

5. A method for reducing polyol accumulation in the lens tissue of a mammal which consists essentially of administering to said mammal an amount of a compound having the formula:



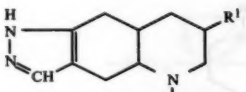
wherein;
R^1 is hydrogen or methyl, and
R^2 is methyl or phenyl
effective in bringing about said reduced polyol accumulation.

4,198,415
PROLACTIN INHIBITING OCTAHYDRO PYRAZOLO[3,4-g]QUINOLINES

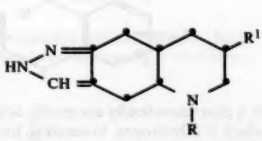
Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 5,061, Jan. 22, 1979, abandoned. This application Apr. 19, 1979, Ser. No. 31,641
Int. Cl.[2] A61K *31/47*; C07D *471/04*
U.S. Cl. 424—258 16 Claims

1. A mixture of trans-dl-Tautomers of the formula



and



wherein R is H, CN, C_1–C_3 alkyl, allyl or benzyl and R^1 is H, COOH, COO(C_1–C_3) alkyl or CH_2X wherein X is CN, Cl, I, Br, OH, OCH_3, SCH_3, SO_2CH_3, OSO_2—(C_1–C_3)—alkyl, O—SO_2—tolyl, OSO_2-phenyl or $CONH_2$ or a pharmaceutically-acceptable salt thereof.

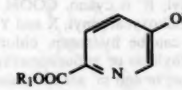
16. A method of inhibiting the secretion of prolactin in mammals which consists of administering to a mammal having a condition in which there is an excess of prolactin being secreted, and in need of treatment, a dose of a compound according to claim 1 effective to reduce prolactin secretion.

4,198,416
5-ALKOXY-PICOLINIC ESTERS AND ANTI-HYPERTENSIVE COMPOSITION CONTAINING 5-ALKOXY-PICOLINIC ESTERS

Takemi Koeda, Yokohama; Takashi Tsuruoka, Kawasaki; Uichi Shibata, Tokyo; Hiroyasu Asaoka, Yokohama; Mitsugu Hachisu, Kawasaki; Osamu Itoh; Yasuharu Sekizawa, both of Tokyo; Shigeharu Inouye, Kanagawa, and Taro Niida, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

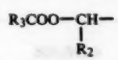
Continuation-in-part of Ser. No. 838,180, Sep. 30, 1977. This application Sep. 22, 1978, Ser. No. 944,683
Claims priority, application Japan, Sep. 30, 1976, 51-116641
Int. Cl.[2] A61K *31/44*; C07D *213/79*
U.S. Cl. 424—266 10 Claims

1. 5-Alkoxy-picolinic esters represented by the formula (I):



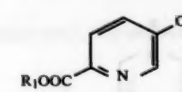
(I)

wherein R represents an alkyl group having 1 to 6 carbon atoms and R_1 represents a phthalidyl group; a phenyl group; an indanyl group; or an acyloxyalkyl group having the formula



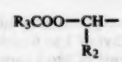
wherein R_2 represents a hydrogen atom or a methyl group and R_3 represents an alkyl group, an alkoxy group, a phenyl group or an aralkyl group.

6. An anti-hypertensive composition containing, as an active ingredient, a therapeutically effective amount of at least one 5-alkoxy-picolinic ester represented by the formula (I):



(I)

wherein R represents an alkyl group having 1 to 6 carbon atoms and R_1 represents a phthalidyl group; a phenyl group; an indanyl group; or an acyloxyalkyl group having the formula



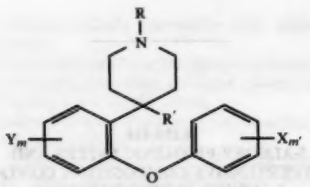
wherein R_2 represents a hydrogen atom or a methyl group and R_3 represents an alkyl group, an alkoxy group, a phenyl group or an aralkyl group.

4,198,417
PHENOXYPHENYLPIPERIDINES

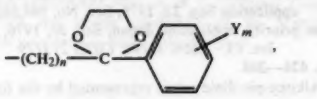
Helen H. Ong, Whippany, and James A. Profitt, Somerville, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed Jan. 10, 1979, Ser. No. 2,346
Int. Cl.[2] A61K *31/445*; C07D *211/64*
U.S. Cl. 424—267 74 Claims

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof in which R is hydrogen, loweralkyl, loweralkenyl, loweralkynyl, cycloalkylloweralkyl, phenylloweralkyl, loweralkanoyl, phenoxycarbonyl, aminocarbonyl, benzoylloweralkyl, cyano, ethylene glycol ketal of the formula



or tetrahydrofurylmethyl; R′ is cyano, COOH, COZ, loweralkylcarbonyl or loweralkoxycarbonyl; X and Y are the same or different and each can be hydrogen, chlorine, fluorine, bromine, methoxy, methylthio or trifluoromethyl; Z is chlorine, fluorine or bromine; m and m′ are the same or different and each can be the integer 1 or 2; and n is an integer of from 1 to 4, inclusive.

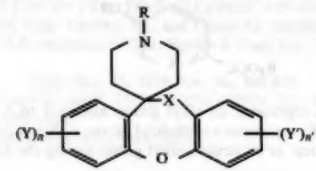
56. A pharmaceutical composition for treating pain, depression or convulsions which comprises between 0.5 and 70% of a compound defined in claim 1 and a pharmaceutically acceptable carrier therefor.

4,198,418
SPIRO[DIBENZ(B,F)OXEPIN-PIPERIDINE]S

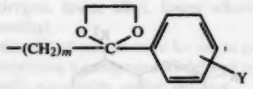
Helen H. Ong, Whippany, and James A. Profitt, Somerville, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed Jan. 10, 1979, Ser. No. 2,348
Int. Cl.[2] C07D *491/10*; A61K *31/55, 31/44*
U.S. Cl. 424—267 54 Claims

1. A compound of the formula

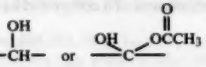


or a pharmaceutically acceptable acid addition salt thereof, in which R is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms, alkynyl of 2 to 6 carbon atoms, hydroxyalkyl, cycloalkylalkyl in which the cycloalkyl moiety contains 3 to 7 carbon atoms, phenalkyl unsubstituted or substituted by one or more substituents selected from the group consisting of nitro, amino, chlorine, fluorine, bromine, methoxy, loweralkyl and trifluoromethyl, phenoxyalkyl unsubstituted or substituted by one or more substituents selected from the group consisting of nitro, amino, chlorine, fluorine, bromine, methoxy, loweralkyl and trifluoromethyl, alkanoyl of 2 to 6 carbon atoms, benzoylalkyl unsubstituted or substituted by one or more substituents selected from the group consisting of nitro, amino, chlorine, fluorine, bromine, methoxy, loweralkyl and trifluoromethyl, cyano, ethylene glycol ketal of the formula



the alkyl moiety of the hydroxyalkyl, cycloalkylalkyl, phenalkyl, phenoxyalkyl and benzoylalkyl containing 1 to 6 carbon atoms;

when R is as defined previously, or



when R is alkanoyl of 2 to 6 carbon atoms, methyl or cyano; Y and Y′ are the same or different and each can be hydrogen, chlorine, fluorine, bromine, methoxy, methylthio or trifluoromethyl; n and n′ are the same or different and each can be an integer from 1 to 2, inclusive; and m is an integer from 1 to 4; inclusive.

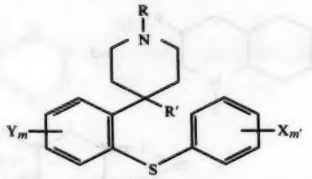
29. A method of alleviating pain in a patient which comprises administering to a patient a pharmaceutically effective amount of a compound of claim 1.

4,198,419
PHENYLTHIOPHENYLPIPERIDINES

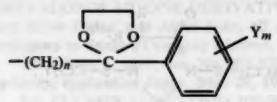
Helen H. Ong, Whippany, and James A. Profitt, Somerville, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed Jan. 10, 1979, Ser. No. 2,349
Int. Cl.[2] A61K *31/445*; C07D *211/64*
U.S. Cl. 424—267 73 Claims

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, in which R is hydrogen, loweralkyl, loweralkenyl, loweralkynyl, cycloalkylloweralkyl, phenylloweralkyl, loweralkanoyl, aminocarbonyl, phenoxycarbonyl, benzoylloweralkyl, cyano, ethylene glycol ketal of the formula



or tetrahydrofurylmethyl; R'0 is cyano, COOH, COZ, lower-alkanoyl or loweralkoxycarbonyl; X and Y are the same or different and each can be hydrogen, chlorine, fluorine, bromine, methoxy, methylthio or trifluoromethyl; Z is chlorine, fluorine or bromine; m and m' are the same or different and each can be the integer 1 or 2; and n is an integer of 1 to 4, inclusive.

55. A pharmaceutical composition for treating pain, depression or convulsions which comprises between 0.5 and 70% of a compound defined in claim 1 and a pharmaceutically acceptable carrier therefor.

4,198,420

SPIRO[DIBENZ(B,F)THIEPIN-PIPERIDINE]S

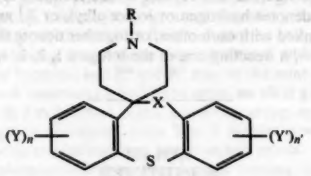
Helen H. Ong, Whippany, and James A. Profitt, Somerville, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed Jan. 10, 1979, Ser. No. 2,350

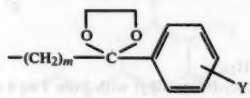
Int. Cl.[2] A61K *31/38*; C07D *313/10*; A61K *31/445, 31/55*

U.S. Cl. 424—267 **54 Claims**

1. A compound of the formula

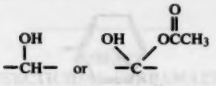


or a pharmaceutically acceptable acid addition salt thereof, in which R is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms, alkynyl of 2 to 6 carbon atoms, hydroxyalkyl, cycloalkylalkyl in which the cycloalkyl moiety contains 3 to 7 carbon atoms, phenalkyl unsubstituted or substituted by one or more substituents selected from the group consisting of nitro, amino, chlorine, fluorine, bromine, methoxy, loweralkyl and trifluoromethyl, phenoxyalkyl unsubstituted or substituted by one or more substituents selected from the group consisting of nitro, amino, chlorine, fluorine, bromine, methoxy, loweralkyl and trifluoromethyl, alkanoyl of 2 to 6 carbon atoms, benzoylalkyl unsubstituted or substituted by one or more substituents selected from the group consisting of nitro, amino, chlorine, fluorine, bromine, methoxy, loweralkyl and trifluoromethyl, cyano, ethylene glycol ketal of the formula



the alkyl moiety of the hydroxyalkyl, cycloalkylalkyl, phenalkyl, phenoxyalkyl and benzoylalkyl containing 1 to 6 carbon atoms; X is

when R is as defined previously, or



when R is alkanoyl of 2 to 6 carbon atoms, methyl or cyano; Y and Y' are the same or different and each can be hydrogen, chlorine, fluorine, bromine, methoxy, methylthio or trifluoromethyl; n and n' are the same or different and each can be an integer from 1 to 2, inclusive; and m is an integer from 1 to 4, inclusive.

29. A method of alleviating pain in a patient which comprises administering to a patient a pharmaceutically effective amount of a compound of claim 1.

4,198,421

ANTIINFLAMMATORY 2-SUBSTITUTED-DIBENZO[2,3:6,7]OXEPINO[4,5-d]IMIDAZOLES

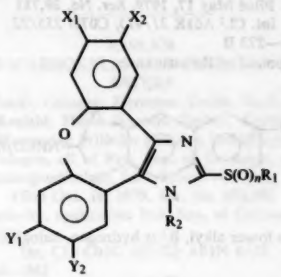
Saul C. Cherkofsky, Wilmington, Del., and Thomas R. Sharpe, Fort Salonga, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1978, Ser. No. 965,075

Int. Cl.[2] A61K *31/415*; C07D *491/04*

U.S. Cl. 424—273 R **18 Claims**

1. A compound of the formula



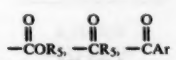
where

n=0, 1 or 2;

R_1=polyfluoro C_1–C_2 alkyl, provided at least two fluorine atoms are alpha to the sulfur atom;

R_2=H,

2-tetrahydropyranyl, 2-tetrahydrofuranyl,



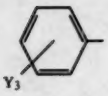
or $-SO_2Ar$;

R_3=H or methyl;

R_4=C_1–C_3 alkyl, benzyl, $-CH_2CH_2OCH_3$ or

R_5=C_1–C_4 alkyl or benzyl;

Ar=



where Y_3 is H, F, Cl, Br, C_1–C_4 alkyl, C_1–C_4 alkoxy or nitro;

X_1 and Y_1 independently = H, F, Cl, dimethylamino or C_1–C_2 alkoxy;

X_2 and Y_2 independently = H, F or Cl; provided at least one of X_1, X_2, Y_1, Y_2 is other than H;

its pharmaceutically suitable acid addition salt where n = 0 or its pharmaceutically suitable metal salt where n = 1 or 2.

13. A method of treating arthritis in a mammal which comprises administering to the mammal an effective antiarthritic amount of a compound of claim **1**.

4,198,422

SUBSTITUTED 2,3-NAPHTHIMIDAZOLE CARBAMATES AND METHOD

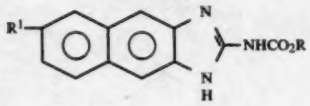
Peter C. Wade, Pennington, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 17, 1979, Ser. No. 39,711

Int. Cl.[2] **A61K** *31/415;* **C07D** *235/32*

U.S. Cl. 424—273 B **7 Claims**

1. A compound of the structure



wherein R is lower alkyl, R^1 is hydrogen, halogen, or

wherein R^2 is lower alkyl, CH_2-lower alkenyl, CH_2-lower alkynyl, phenyl or phenyl substituted with halogen, lower alkoxy, cyano, lower alkyl or trifluoromethyl, and n is 0, 1 or 2, and pharmaceutically acceptable salts thereof.

6. An anthelmintic composition comprising an effective amount of a compound as defined in claim **1**, and a pharmaceutically acceptable carrier therefor.

4,198,423

1,3-BIS-(TRIHALOMETHYLSULFENYL)-IMIDAZOLINE-2,4-DIONES

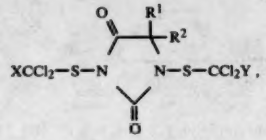
Costin Rentzea, Heidelberg; Ernst-Heinrich Pommer, Limburgerhof; Celia J. Mappes, Boehl-Iggelheim, and Bernd Zeeh, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 20, 1979, Ser. No. 22,161

Int. Cl.[2] **A01N** *9/12;* **C07D** *233/80*

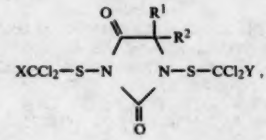
U.S. Cl. 424—273 R **4 Claims**

1. A 1,3-bis-(trihalomethylsulfenyl)-imidazoline-2,4-dione of the formula



where X and Y are identical or different and each denotes chlorine or fluorine, and R^1 and R^2 are identical or different and each denotes hydrogen or lower alkyl, or R^1 and R^2 are directly linked with each other, or together denote the radical $-(CH_2)_n-$, n denoting one of the integers 1, 2, 3, 4, 5 and 6.

4. A process for combating fungi, wherein the objects to be protected against fungus attack are treated with an effective amount of a 1,3-bis-(trihalomethylsulfenyl)-imidazoline-2,4-dione of the formula



where X and Y are identical or different and each denotes chlorine or fluorine, and R^1 and R^2 are identical or different and each denotes hydrogen or lower alkyl, or R^1 and R^2 are directly linked with each other, or together denote the radical $-(CH_2)_n-$, n denoting one of the integers 1, 2, 3, 4, 5 and 6.

4,198,424

SUBSTITUTED 1-PHENYL-2-PYRROLIDIN-2-YL-ETHANOLS, THEIR SYNTHESIS, THEIR USE AND THEIR COMPOSITIONS

Klaus Eistetter, Constance, and Hans-Peter Kley, Allensbach, both of Fed. Rep. of Germany, assignors to Byk Gulden Lomberg Chemische Fabrik GmbH, Constance, Fed. Rep. of Germany

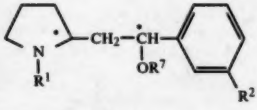
Filed Nov. 30, 1978, Ser. No. 965,147

Claims priority, application Luxembourg, Dec. 1, 1977, 78625

Int. Cl.[2] **C07D** *405/10, 207/44;* **A61K** *31/40*

U.S. Cl. 424—274 **22 Claims**

1. A compound which, in free-base form, is of the formula



wherein

R^1 is $-C_{n-1}H_{2n-1}$;

R^2 is chloro, hydroxy, alkyl with from 1 to 4 carbon atoms or alkoxy with from 1 to 4 carbon atoms;

R^7 is a hydrogen atom, carboxylic acid acyl, alkyl with from 1 to 7 carbon atoms or tetrahydropyranyl;

n is a positive whole number of at most 8 and

* designates an asymmetric carbon atom.

17. A process for preventing or alleviating pain which comprises administering to a mammal subject to or afflicted with pain an analgesically-effective amount of one or a combination of pharmacologically-acceptable compounds according to claim **1**.

4,198,425

MEVALONOLACTONE DERIVATIVES

Seiji Mitsui; Akira Ogiso, and Akira Indo, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

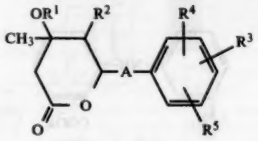
Filed May 8, 1978, Ser. No. 903,575

Claims priority, application Japan, May 24, 1977, 52/60110

Int. Cl.[2] A61K *31/365*; C07D *309/30*

U.S. Cl. 424—279 **28 Claims**

1. A compound having the general formula



wherein A represents a, methylene, ethylene, or trimethylene group; R^1 represents a hydrogen atom, an aliphatic acyl group containing from 2 to 8 carbon atoms, a benzoyl group, a benzoyl group substituted with hydroxy, an alkoxy containing from 1 to 4 carbon atoms, an aliphatic acyloxy containing from 2 to 8 carbon atoms or halogen; R^2 represents hydrogen atom, a halogen atom or a methyl group; R^3 is a hydrogen atom, fluorine atom, chlorine atom, bromine atom, trifluoromethyl group, 2,2,2-trifluoroethyl group, an alkyl group containing from 1 to 4 carbon atoms, hydroxy group, an aliphatic acyloxy group containing from 2 to 4 carbon atoms, phenyl group, benzoyloxy group, phenoxy group, benzyloxy group, phenethyloxy group, cinnamyloxy group, benzoyloxy having the aromatic ring substituted with fluorine, chlorine or bromine, or benzyloxy having the aromatic ring substituted with fluorine, chlorine or bromine; and R^4 and R^5 may be the same or different and each represents a hydrogen atom, an alkyl group containing from 1 to 4 carbon atoms, a hydroxy group, an aliphatic acyloxy group containing from 2 to 8 carbon atoms, or an alkoxy group containing from 1 to 4 carbon atoms.

28. A pharmaceutical composition for treating hyperlipidemia in mammals comprising an inert pharmaceutically acceptable carrier or diluent and hypolipidemic effective amount of a compound of claim 1.

4,198,426

2-SUBSTITUTED-3-METHYL-γ-PYRONE TRICYCLIC DERIVATIVES

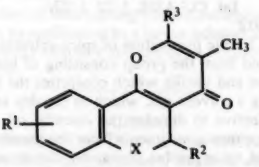
Adolf H. Philipp, St. Laurent, and Ivo L. Jirkovsky, Montreal, both of Canada, assignors to Ayerst McKenna & Harrison Ltd., Montreal, Canada

Division of Ser. No. 855,538, Nov. 28, 1977, Pat. No. 4,060,619. This application Jan. 29, 1979, Ser. No. 7,059

Int. Cl.[2] C07D *493/14*; A61K *31/35*

U.S. Cl. 424—283 **13 Claims**

1. A compound of formula I



(I)

in which R^1 is hydrogen, halogen, nitro, trifluoromethyl, lower alkyl or lower alkoxy; R^2 is hydrogen or lower alkyl; R^3 is hydroxy, or $COOR^4$ wherein R^4 is hydrogen or lower alkyl, and X is O, or a therapeutically acceptable salt thereof.

12. A method for preventing or treating allergic conditions in a mammal which comprises administering to said mammal an effective allergy alleviating amount of a compound of formula I or a therapeutically acceptable salt thereof, as claimed in claim 1.

4,198,427

INSECTICIDAL CARBAMATES

James B. Buchanan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

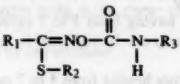
Continuation-in-part of Ser. No. 791,255, Apr. 27, 1977, abandoned. This application Jun. 30, 1978, Ser. No. 920,838

Claims priority, application Japan, Sep. 10, 1977, 77/121920[U]; Jan. 30, 1978, 78/9012[U]

Int. Cl.[2] C07C *119/18*; A01N *9/12*

U.S. Cl. 424—298 **26 Claims**

1. A composition comprising a reaction product of formaldehyde and a compound of the formula



where

R_1 is branched or straight chain alkyl of 1–3 carbon atoms;

R_2 is branched or straight chain alkyl of 1–3 carbon atoms; and

R_3 is hydrogen or methyl;

whereby the reaction product is formed by contacting said compound with formaldehyde at a molar ratio in a range of 1:0.1 to 1:50.

4,198,428

ARYL-THIOCARBOXYLIC ACID THIOCYANOMETHYL ESTERS

Siegfried Oeckl, Cologne; Hermann Genth, Krefeld; Wilfried Paulus, Krefeld; Heinz-Joachim Rother, Krefeld; Wilhelm Stendel, Wuppertal; Wilhelm Brandes, Leichlingen, and Peter Kraus, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

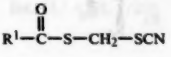
Filed Oct. 19, 1978, Ser. No. 952,902

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747825

Int. Cl.[2] C07C *161/02*; A01N *9/18*

U.S. Cl. 424—302 **19 Claims**

1. Aryl-thiocarboxylic acid thiocyanomethyl ester of the formula



wherein

R^1 represents an aryl radical having 6 to 18 carbon atoms in the ring system which can be substituted by halogens, nitro groups, alkyl radicals, halogeno alkyl and alkoxy radicals wherein said alkyl, halogeno alkyl, and alkoxy radicals contain 1–6 carbon atoms.

4,198,429

ESTERS OF 5-METHYL-10,11-DIHYDROPROSTAGLANDIN-A_1

Wilhelm Bartmann, Bad Soden am Taunus; Gerhard Beck, Frankfurt am Main; Ulrich Lerch, Hofheim am Taunus, and Bernward Schölkens, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

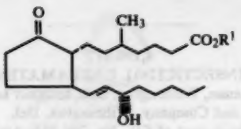
Filed Jun. 23, 1977, Ser. No. 809,432

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1976, 2628564

Int. Cl.[2] C07C *177/00*; A61K *31/215*

U.S. Cl. 424—305 **2 Claims**

1. A compound of the formula



wherein R^1 is

cycloalkyl having from 4 to 7 carbon atoms, or

linear or branched alkyl having from 3 to 10 carbon atoms, or

linear or branched alkyl having from 1 to 6 carbon atoms which is substituted by

(a) linear or branched alkoxy having from 1 to 6 carbon atoms, or by

(b) cycloalkyl having from 5 to 7 carbon atoms, wherein one CH_2 group can be replaced by an oxygen atom, or by

(c) cycloalkyloxy having from 5 to 7 carbon atoms, or by

(d) phenyl, or by

(e) phenoxy, or by

(f) hydroxy.

4,198,430

13,14-DEHYDRO-11-DEOXY-PROSTAGLANDIS

Carmelo Gandolfi; Renato Pellegate; Franco Faustini, and Angelo Fumagalli, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

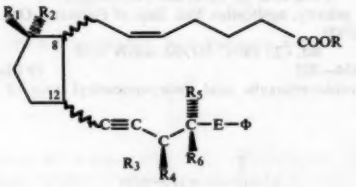
Filed Mar. 8, 1976, Ser. No. 664,472

Claims priority, application Italy, Mar. 14, 1975, 21264 A/75

Int. Cl.[2] C07C *177/00*; A61K *31/145*

U.S. Cl. 424—305 **9 Claims**

1. Optionally active compounds having the following general formula (I)



(I)

wherein

R is a member selected from the group consisting of hydrogen, a C_1–C_{12} alkyl group, and a cation of a pharmaceutically acceptable base;

one of R_1 and R_2 is hydrogen and the other is hydroxy alkanoyloxy, benzoyloxy, p-phenylbenzoyloxy or R_1 and R_2 together form an oxo group;

one of R_3 and R_4 is hydrogen and the other is hydroxy;

R_5 and R_6 are independently selected from the group consisting of hydrogen, fluorine and C_1–C_4alkyl, provided that when one of them is C_1–C_4 alkyl, the other is hydrogen or fluorine and when one of them is fluorine, the other is C_1–C_4alkyl;

E is selected from the group consisting of $—(CH_2)_n—$, wherein n is an integer of 1 to 6, and $—(CH_2)_{n1}—O—(CH_2)_{n2}—$, wherein n_1 and n_2 are independently selected from the group consisting of zero, 1, 2 and 3; Φ is a member selected from the group consisting of methyl and cycloalkyl containing 3to 7 ring carbon atoms and wherein the chains bound to the carbon atoms in the 8- and 12- positions have a trans-configuration.

4,198,431

ALKYL N-(3-TRIFLUOROMETHYLPHENYL)-ANTHRANILATE

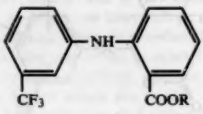
Hideo Kato, Katsuyamashi, Japan, assignor to Hokuriku Pharmaceutical Co., Ltd., Japan

Filed Feb. 2, 1978, Ser. No. 874,494

Int. Cl.[2] A61K *31/245*; C07C *101/54*

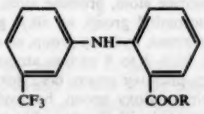
U.S. Cl. 424—310 **14 Claims**

1. An N-(3-trifluoromethylphenyl)anthranilic acid ester represented by the formula:



wherein R represents an alkyl group having 4 to 8 carbon atoms, inclusive.

10. A pharmaceutical composition, useful as an anti-inflammatory agent, containing an effective anti-inflammatory amount of an N-(3-trifluoromethylphenyl)anthranilic acid ester represented by the formula:



wherein R represents an alkyl group having 4 to 8 carbon atoms, inclusive, together with a pharmaceutically acceptable carrier.

13. A method for the treatment of a patient suffering from inflammation, comprising the step of topically administering to said patient a compound of claim 1 in an amount effective for alleviation of said condition.

4,198,432

PROCESS FOR THE PRODUCTION OF SPICE EXTRACTS

Otto Vitzthum, Bremen, and Peter Hubert, Bremen-Lesum, both of Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle mbH, Mulheim, Fed. Rep. of Germany

Division of Ser. No. 754,803, Dec. 27, 1976, Pat. No. 4,123,559, which is a continuation of Ser. No. 560,432, Mar. 20, 1975, abandoned, which is a continuation of Ser. No. 258,586, Jun. 1, 1972, abandoned. This application Jul. 28, 1978, Ser. No. 929,139

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1971, 2127611

The portion of the term of this patent subsequent to Oct. 31, 1995, has been disclaimed.

Int. Cl.[2] A23L *1/22, 1/221*

U.S. Cl. 426—312 **13 Claims**

1. A process for the production of spice extracts from natural spice selected from the group consisting of black pepper, clove, cinnamon and vanilla which comprises the steps of:

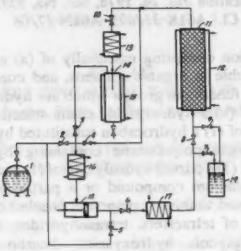
(a) contacting a solvent gas, which in the dry supercritical state is effective to dissolve the essential oil component containing aroma constituents from the natural spice and leave a first spice residue containing flavor constituents, with the natural spice, for a time sufficient to extract the essential oil component of the spice and leave a first spice residue containing flavor constituents, the solvent gas being in dry supercritical state,

(b) separating the aroma constituents from the solvent gas,

(c) contacting a solvent gas, which in the wet supercritical condition is effective to dissolve the flavor constituents of the natural spices and leave a second spice residue, with

the first spice residue, for a time sufficient to extract the flavor constituents of the first spice residue and leave said second spice residue, the solvent gas being in wet supercritical state,

(d) separating the flavor constituents from the extraction solvent gas of step c,



wherein the solvent gas in each of steps (a) and (c) is selected from the group consisting of carbon dioxide; saturated and unsaturated hydrocarbons containing up to three carbon atoms; nitrous oxide; saturated and unsaturated halogenated hydrocarbons containing up to three carbon atoms wherein the halogen is at least one of fluorine and chlorine; sulfur hexafluoride and mixtures thereof.

4,198,433

ANTI-TRANSPLANTED TUMOR REMEDY

Evgeni V. Golovinski; Boris V. Alexiev; Alexander V. Spassov; Stoycho B. Stoev; Lilyana S. Maneva; Emanuil A. Emanuilov; Tzanko S. Stoychev, and Ivan I. Angelov, all of Sofia, Bulgaria, assignors to Ecnpk Po Biologia I Mediko-Biologichni Problemi Pri Ban, Sofia, Bulgaria

Continuation-in-part of Ser. No. 654,255, Feb. 2, 1976, abandoned. This application Jun. 21, 1977, Ser. No. 808,598

Int. Cl.[2] A61K *31/16*

U.S. Cl. 424—320 **3 Claims**

3. A method for the suppression of transplanted tumors in animals by administration to an animal having a transplanted tumor of an effective amount for suppressing transplanted tumors a mixture of hydrogen bromide salts of bis-(beta-dichloroethyl)-hydrazides of cystine (I) and cysteine (II) at a composition ratio of I:II of 95:5.

4,198,434

GLUCONYL HYDRAZIDES

Janice M. Bergman, Kansas City, Mo.; Kurt J. Bevernitz, Mission, and Jerry L. Rutter, Overland Park, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 931,236, Aug. 7, 1978, abandoned. This application Feb. 23, 1979, Ser. No. 14,402

Int. Cl.[2] A01N *9/20*

U.S. Cl. 424—320 **1 Claim**

1. A method of interrupting the metamorphosis of southern army worm by application to a larvae infested area a metamorphosis inhibiting effective amount of an N-(lower alkyl)gluconyl hydrazide.

4,198,435

PHARMACEUTICAL COMPOSITIONS

Dora N. Richardson, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 2, 1978, Ser. No. 874,481

Int. Cl.[2] A61K *31/135*

U.S. Cl. 424—330 **5 Claims**

4. A method of producing an anti-oestrogenic effect in warm blooded animals which require said treatment, which comprises administering orally or parenterally to said warm blooded animal, an anti-oestrogenically effective amount of 1-(p-β-dimethylaminoethoxyphenyl)-trans-1-(p-hydroxyphenyl)-2-phenylbut-1-ene or a pharmaceutically acceptable salt thereof.

4,198,436

DIALKYLAMINO- AND DIALKYLAMINOALKOXY-SUBSTITUTED ARYLOXYALKYL DIKETONES

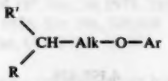
Joseph C. Collins, East Greenbush, and Guy D. Diana, Stephentown, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 725,160, Sep. 21, 1976, Pat. No. 4,133,959, which is a continuation-in-part of Ser. No. 576,311, May 12, 1975, Pat. No. 4,031,246, which is a continuation-in-part of Ser. No. 381,406, Jul. 23, 1973, Pat. No. 3,933,837. This application Jun. 7, 1978, Ser. No. 913,363

Int. Cl.[2] A01N *9/20, 9/24*; C07C *93/06, 91/42*

U.S. Cl. 424—330 **7 Claims**

1. A compound of the formula



wherein:

Alk is alkylene of 3 to 10 carbon atoms;

R and R′ are alkanoyl of 2 to 6 carbon atoms;

and Ar is phenyl substituted by a member of the group consisting of dialkylamino where alkyl has from 1 to 4 carbon atoms, and dialkylaminoalkoxy where alkyl has from 1 to 4 carbon atoms and alkoxy has from 2 to 4 carbon atoms.

7. A method for combatting viruses which comprises contacting the locus of said viruses with a composition containing an antivirally effective amount of at least one compound according to claim 1 in admixture with a suitable carrier or diluent.

4,198,437

FRENCH FRIED POTATO PRODUCT

James E. Citti, St. Louis Park, and Carl S. Dienst, Edina, both of Minn., assignors to Ore-Ida Foods, Inc., Boise, Id.

Division of Ser. No. 370,430, Jun. 15, 1973, Pat. No. 4,082,855. This application Feb. 23, 1978, Ser. No. 880,641

Int. Cl.[2] A23L *1/216*

U.S. Cl. 426—104 **5 Claims**

1. A potato product for frying as a French fry having superior crispness, said product being an elongate extrusion of potato dough comprising mashed blanched potatoes and an emulsifier, said dough having a moisture content within the range of about 60% to 75% by weight and said extrusion forming a plurality of serrated ridges extending longitudinally thereof and alternating with longitudinal valleys, said ridges being broken transversely at frequent intervals providing a multiplicity of individual projections in series arrangement along the lengths of said ridges.

4,198,438

MODIFIED GLUTEN PRODUCT AND PROCESS

Norman S. Singer, and David W. Murray, both of London, Canada, assignors to John Labatt Limited, London, Canada

Filed Aug. 26, 1977, Ser. No. 828,197

Claims priority, application United Kingdom, Aug. 27, 1976, 35670/76

Int. Cl.[2] A21D *2/36*; A23J *3/00*

U.S. Cl. 426—549 11 Claims

1. A gluten product consisting essentially of vital gluten modified by reaction with xanthan gum, the ratio of gluten to xanthan gum being from about 200:1 to 4:1 and wherein at least about 40 percent by weight of the free gliadin in the gluten is complexed with the xanthan gum.

4,198,439

NUT CHEESE PRODUCT

Maurice W. Hoover, Raleigh, N.C., assignor to Research Triangle Institute, Research Triangle Park, N.C.

Filed May 18, 1978, Ser. No. 907,191

Int. Cl.[2] A23L *1/36*

U.S. Cl. 426—632 16 Claims

1. A nut cheese product comprising a homogeneous blend of by weight 50 to 80 percent ground roasted nuts, 10 to 40 percent dehydrated cheese material and 5 to 15 percent of a texture modifying agent which comprises hydrogenated fats, non-hydrogenated fats, glycerides and mixtures thereof, said product having a water activity below about 0.70 and capable of being maintained in a wholesome condition for extended periods of time without refrigeration.

4,198,440

FOOD AND METHOD FOR ITS PREPARATION

Gwenole J. C. Le Jeune, St. Julien de Concelles, France, assignor to Societe Civile Hydromer, Paris, France

Filed May 10, 1978, Ser. No. 904,408

Claims priority, application France, May 12, 1977, 77 14481

Int. Cl.[2] A23K *1/18*

U.S. Cl. 426—641 14 Claims

1. A method for preparing a foodstuff in the form of coherent filaments of substantial length in a phase separation press, comprising:

simultaneously crushing and compressing whole or coarsely broken foodstuff raw material with at least one advancing punch in a closed chamber filled with said raw material under a pressure sufficient to compress and masticate soft foodstuff matter and crush hard matter in said raw material and to extrude said masticated soft matter from said press, said closed chamber and/or punch being provided with exit channels through which said masticated matter is extruded; and

extruding the masticated soft foodstuff matter from said press.

4,198,441

ADHERENT CONTROLLED RELEASE PESTICIDE USING ORGANO POLY SILOXANES

Robert W. Young, New York, N.Y.; Samuel Prussin, Carmel, Calif., and Norman G. Gaylord, New Providence, N.J., assignors to Young, Prussin, MGK, J.V., New York, N.Y.

Continuation of Ser. No. 696,359, Jun. 15, 1976, abandoned. This application Jul. 24, 1978, Ser. No. 927,721

Int. Cl.[2] A61K *31/695*; A01N *17/08*

U.S. Cl. 427—2 27 Claims

1. A composition consisting essentially of (a) and organopolysiloxane, soluble in organic solvents, and containing hydroxyl groups or functional groups which are hydrolyzable to hydroxyl groups, (b) a hydrolyzable silane selected from the group consisting of (1) a hydrocabon substituted hydrolyzable silane, (2) an organopolysiloxane containing hydrolyzable silane groups, and (3) a partial hydrolyzate of (1) and/or (2), (c) a hydrolyzable titanium compound or a partial hydrolyzate thereof wherein said titanium compound is selected from the group consisting of tetraesters, tetraanhydrides, tetraamides and chelates of glycols, hydroxyacids, dicarboxylic acids, diketones, ketoesters and alkanolamines, and (d) an insecticide.

4,198,442

METHOD FOR PRODUCING ELEVATED TEMPERATURE CORROSION RESISTANT ARTICLES

Dinesh K. Gupta; Louis E. Dardi, both of Muskegon, and William R. Freeman, Jr., North Muskegon, all of Mich., assignors to Howmet Turbine Components Corporation, Muskegon, Mich.

Filed Oct. 31, 1977, Ser. No. 847,253

Int. Cl.[2] B05D *3/06*

U.S. Cl. 427—34 7 Claims

1. A method for improving the elevated temperature properties of articles comprising nickel, cobalt and iron base articles comprising the steps of applying a first coating to said articles, said first coating consisting essentially of from 15 to 30 percent by weight chromium, 3 to 7 percent by weight aluminum, up to 5 percent by weight of an element selected from the group consisting of yttrium and the rare earth elements, the balance comprising at least one member selected from the group consisting of nickel, cobalt and iron, said first coating having a nominal thickness between 0.0005 and 0.005 inches, applying a second coating over said first coating, said second coating having a thickness between one-half and four times the thickness of the first coating, said second coating consisting essentially of from 10 to 30 percent by weight chromium, 25 to 35 percent by weight aluminum, up to about 10 percent by weight of one or more elements selected from the group consisting of yttrium, scandium, cerium, hafnium, zirconium, titanium and tantalum, the balance comprising at least one member selected from the group consisting of iron, nickel and cobalt, and heat treating said article at a temperature in the range of 1900° to 2200° F. for one to 10 hours in an inert atmosphere.

5. A method for improving the elevated temperature properties of articles comprising nickel, cobalt and iron base articles comprising the steps of applying a coating to said articles, said coating comprising an inner portion adjacent the outer article surface which consists essentially of from 15 to 30 percent by weight chromium, 3 to 7 percent by weight aluminum, up to 5 percent by weight of an element selected from the group consisting of yttrium and the rare earth elements, the balance comprising at least one member selected from the group consisting of nickel, cobalt and iron, gradually varying the coating composition so that the coating comprises an outer portion which consists essentially of from 10 to 30 percent by weight chromium, 25 to 35 percent by weight aluminum, up to about 10 percent by weight of one or more elements selected from

the group consisting of yttrium, scandium, cerium, hafnium, zirconium, titanium and tantalum, the balance comprising at least one member selected from the group consisting of iron, nickel and cobalt, and heat treating said article at a temperature in the range of 1900° to 2200° F. for one to 10 hours in an inert atmosphere.

4,198,443

SINTERLESS ZINC OXIDE VARISTOR DEVICES

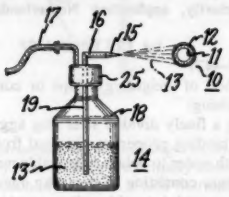
John J. Pitha, Lenox, Mass., assignor to General Electric Company, N.Y.

Filed May 26, 1978, Ser. No. 910,073
Int. Cl.[2] B05D *1/00, 1/08*
U.S. Cl. 427—34 **9 Claims**

1. A method for manufacturing sinterless zinc oxide varistor devices comprising the steps of:

providing a mixture of zinc oxide powder and additive metal oxide powders;

subjecting the mixture to a high temperature flame for heating and fusing the oxides;



providing an oxygen containing gas stream for directing the oxide powders through the flame;

directing the fused oxides upon the surface of an electrically insulating aluminum oxide substrate to form the varistor material on the substrate; and

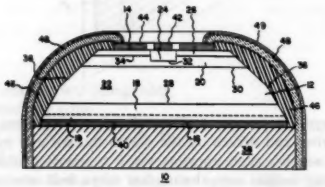
providing at least one metal electrode layer on the varistor material.

4,198,444

METHOD FOR PROVIDING SUBSTANTIALLY HERMETIC SEALING MEANS FOR ELECTRONIC COMPONENTS

Alexander J. Yerman, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 601,838, Aug. 4, 1975, abandoned. This application Nov. 22, 1978, Ser. No. 963,063
The portion of the term of this patent subsequent to Apr. 12, 1994, has been disclaimed.
Int. Cl.[2] B05D *5/12;* **C23C** *11/00;* **H01L** *23/28*
U.S. Cl. 427—95 **25 Claims**



1. A method for coating selected surface areas of an electronic component comprising the process steps of:

a. applying a layer of an organic polymer protective coating material having a capability to withstand an elevated temperature of from approximately 325° C. to about 475° C. for a period of time sufficient to chemically vapor deposit at least one layer of glass on the polymer layer and having a low glass transition temperature range of from about 150° C. to 350° C. on a selected surface area of an electronic component and having the ability to bond well to the at least one layer of chemically vapor deposited glass, and

b. applying by chemical vapor deposition a first layer of a glass material on the layer of protective coating material, wherein the glass material is one selected from the group consisting of borosilicate glass and phosphosilicate glass.

4,198,445

LATENT IMAGE PRINTING AND DEVELOPMENT

Phillip E. Sokol, Rockville, and Robert F. Farmer, Gaithersburg, both of Md., assignors to The Gillette Company, Boston, Mass.

Division of Ser. No. 616,197, Sep. 24, 1975. This application Oct. 26, 1976, Ser. No. 735,634
Int. Cl.[2] B32D *35/00*
U.S. Cl. 427—140 **5 Claims**

1. A method of using a reusable, paper-based feedback system comprising applying an alkaline solution to a paper substrate having a water soluble acidity-alkalinity of from 0.08% acid as sulfur trioxide to 0.05% base as sodium hydroxide, said paper substrate bearing

a. a visible image and

b. an invisible image derived from printing on said paper substrate an ink comprising from 0.1 to 9.0% by weight phenolphthalein.

4,198,446

APPARATUS FOR THE MANUFACTURE OF A DUAL COATED MANIFOLD SHEET WITH PRESSURE-RUPTURABLE MATERIALS

William J. Goetz, Appleton, Wis., assignor to NCR Corporation, Dayton, Ohio

Filed Feb. 14, 1978, Ser. No. 877,651
Int. Cl.[2] B41M *5/00*
U.S. Cl. 427—150 **14 Claims**

1. A method of producing a carbonless manifold sheet having relatively uniform coatings on opposite sides of the sheet, one side being coated with an aqueous emulsion containing pressure-rupturable capsules of a liquid color-forming material, and the other side being coated with a reactive coating composition, which comprises applying the aqueous emulsion to an anilox roll, transferring the aqueous emulsion from the anilox roll and then to one side of the paper web, while simultaneously metering a reactive coating onto the opposite side of said paper web, and then drying both coatings at the same time to form a coated sheet substantially free of curl and dimensional instability.

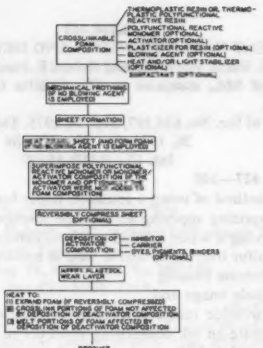
9. An apparatus for simultaneously coating a web with pressure-rupturable capsules of a liquid color-forming material on one side and a reactive material on the other side thereof which comprises a metering roll, an anilox roll and a covered backing roll disposed in side-by-side relationship, said anilox roll being disposed between said metering roll and said backing roll and containing a plurality of cells disposed below its surface, said backing roll being arranged so that the pressure-rupturable encapsulated material is transferred from the anilox roll to the backing roll at the nip formed therebetween, means for bringing one side of said web into contact with said backing roll for coating said side with the pressure-rupturable encapsulated material and means for simultaneously metering a reactive coating to the opposite side of said web at said contact position.

4,198,447
Patent Not Issued For This Number

4,198,448
PROCESS OF FORMING AN EMBOSSED SURFACE COVERING

William J. Kauffman, Lancaster, and George L. Lilley, Manheim, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Jan. 16, 1978, Ser. No. 869,682
Int. Cl.[2] B05D *3/02, 5/00*
U.S. Cl. 427—244 **6 Claims**



1. A process of forming an embossed surface covering comprising forming a cross-linkable foam on a backing, the cross-linkable foam comprising:

(a) at least one thermoplastic resin homopolymer, copolymer, polymer blend, or polymer mixture; a polyfunctional reactive monomer which will cross-link; and an activator to facilitate cross-linking; or

(b) at least one thermoplastic polyfunctional resin which contains sufficient functionality to cross-link and an activator to facilitate cross-linking;

depositing a deactivator composition on at least a portion of the cross-linkable foam surface in an amount sufficient to inhibit cross-linking in the portions of the cross-linkable foam affected by the deposition of the deactivator composition upon the subsequent application of heat; and heating the resulting cross-linkable foam-containing sheet to a temperature sufficient to cross-link the portions of the foam not affected by the deposition of deactivator composition and melt the portions of the foam affected by the deposition of deactivator composition, thereby producing an embossed surface having raised, cellular, cross-linked portions and lower melted portions of higher density than the raised portions.

4,198,449
METHOD FOR THE PREPARATION OF THIN FILMS OF HIGH-TEMPERATURE-RESISTANT METALS SUCH AS TUNGSTEN, MOLYBDENUM, RHENIUM OR OSMIUM

Helmut Freller, Röthenbach, and Günther Titze, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,018
Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722668
Int. Cl.[2] C23C *11/00, 13/00;* **B05D** *3/00, 3/02*
U.S. Cl. 427—255.3 **8 Claims**

1. In a method for the preparation of thin films of high-temperature-resistant metals on a heated high-temperature-resistant substrate by thermal evaporation of the oxides of said high-temperature-resistant metals in a high vacuum, the improvement comprising simultaneously evaporating the oxide of said high-temperature-resistant metal with a reduction metal such that the molecules of said oxide and the atoms of said reduction metal impinge together and chemically react on the surface of said heated substrate to cause reduction of the metal oxide and oxidation of the reduction metal, in the process of which the high-temperature-resistant metal is precipitated on the surface of said substrate, and the resultant oxides of said reduction metal are at least partially evaporated and removed or are incorporated into said thin film.

4,198,450
COATING PIPES AND RECEPTACLES WITH A WEIGHTING LAYER OR MASS OF STEEL SLAG AGGREGATE

Carel W. J. Hooykaas, Rotterdam, Netherlands, assignor to Pelt & Hooykaas B.V., Netherlands

Continuation of Ser. No. 734,641, Oct. 21, 1976, abandoned, which is a division of Ser. No. 555,264, Mar. 4, 1975, abandoned.
This application Mar. 3, 1978, Ser. No. 882,988
Claims priority, application Netherlands, Mar. 6, 1974, 7403055
Int. Cl.[2] B05D *1/02*
U.S. Cl. 427—427 **1 Claim**

1. A method of weighting a pipe or container for storing fluids comprising:

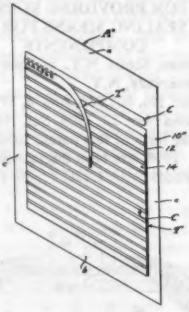
(a) mixing a finely divided steel slag aggregate having hydraulic binding properties obtained from a steel slag furnace with water to obtain a sprayable mixture, said sprayable mixture consisting of steel slag aggregate and water,

(b) applying said sprayable mixture onto the pipe or container by spraying said mixture onto said pipe or container in order to obtain a weighting coating layer on said pipe or container.

4,198,451
MARKER LAYUP

Dick E. Johnstun, 27472 Via Olmo, Mission Viejo, Calif. 92691

Filed Mar. 26, 1979, Ser. No. 23,594
Int. Cl.[2] B32B *1/08, 3/16*
U.S. Cl. 428—36 **12 Claims**



1. A layup for insertion of heat shrink marker tubes through a typewriter and driven by the platen thereof and into alignment to receive type imprints via a typewriter ribbon/tape transferring indicia onto the marker tubes, and consisting of;

a flexible traction sheet of rectangular form and having marginal portions,

a cover coating comprised of a thin layer of friction material extending longitudinally of the back of the traction sheet,

a plurality of flexible marker tubes of partially cured cross-

linked polymer tubing hardened into a constrained flattened configuration and with adjacent edges and extending transversely over the front of the traction sheet and exposed to the typewriter type and typewriter ribbon/-tape between said marginal portions, and

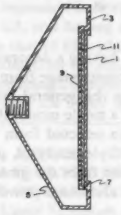
a releasable pressure adhesive securing the marker tubes to the front of the traction sheet.

4,198,452

MOLDED PLASTIC ARTICLE HAVING A THERMALLY SHOCKABLE INSERT THEREIN

Tyler K. Olcott, Valentines, Va., and Robert M. Miller, Lakeland, Fla., assignors to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 733,549, Oct. 18, 1976, Pat. No. 4,110,390.
This application Apr. 24, 1978, Ser. No. 899,147
Int. Cl.[2] B32B *1/04, 3/06;* G02B *5/08*
U.S. Cl. 428—68 **8 Claims**



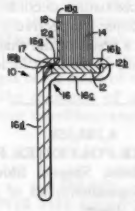
1. An article of manufacture comprising a molded and hardened mass partially surrounding a thermally shockable object so as to leave a portion of a surface of said thermally shockable object unsurrounded but otherwise molded to mechanically grip the edges of said thermally shockable object within the confines of said molded and hardened mass; and a layer of non-adhesive thermal insulating material interposed between a portion of said hardened mass and said thermally shockable object.

4,198,453

WEATHER SEAL AND METHOD OF MAKING SAME

Harold G. Olson, Westpont, Conn., assignor to Amesbury Industries, Inc., Amesbury, Mass.

Filed Feb. 23, 1979, Ser. No. 14,371
Int. Cl.[2] B32B *5/00;* E06B *7/16*
U.S. Cl. 428—85 **6 Claims**



1. A weather seal comprising

A. a backing strip,

B. a pile body projecting up from one face of the backing strip,

C. a flexible resilient film barrier positioned against at least one side of the pile body, the upper edge of the barrier being more or less even with the top of the pile body, the lower edge margin of the film extending down to the base of the pile body and across an edge margin of the backing strip, and

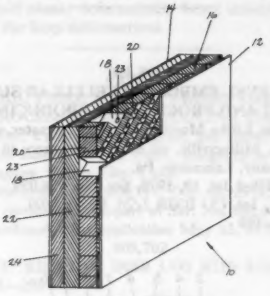
D. a channel engaged around the backing strip, said channel having a pair of side walls which overlie the opposite edge margins of the backing strip and a bottom wall engaging under that strip, said channel side walls being clinched against the channel bottom wall so that the backing strip and barrier lower edge margin are gripped tightly, with the barrier being bent adjacent the base of the pile body but tending to resume its normal unstressed flat condition, so that the barrier portion extending out of the channel is biased against the pile body so that it remains in an upstanding erect position adjacent that body.

4,198,454

LIGHTWEIGHT COMPOSITE PANEL

Phil Norton, St. Louis, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Oct. 27, 1978, Ser. No. 955,490
Int. Cl.[2] B32B *3/12*
U.S. Cl. 428—117 **11 Claims**



1. A lightweight composite panel for use in constructing a portable or mobile enclosure capable of resisting penetration by small arms projectiles, explosive forces and heat, comprising:

a first metal panel;

a second metal panel spaced in substantial parallelism to the first metal panel;

a honeycomb configured panel disposed between the first and second metal panels in abutment to the first metal panel and oriented with the walls of the honeycomb configuration generally perpendicular to the first metal panel;

a subliming material at least partially filling the cell structure of the honeycomb configured panel;

a panel of lightweight projectile resisting material disposed between the honeycomb configured panel and the second metal panel;

means for venting gas produced by the subliming material from the cell structure of the honeycomb configured panel; and,

a panel of yieldable thermal insulation material sandwiched between and in abutting juxtaposition to both the panel of lightweight projectile resisting material and the second metal panel.

4,198,455

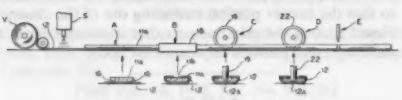
TRIM AND MOLDING STRIP AND THE METHOD OF FORMING SAME

Earl M. Spiro, Chicago, and Basil J. Falcone, Lake Forest, both of Ill., assignors to Pan American Gyro-Tex Corporation, Bensenville, Ill.

Filed Dec. 21, 1978, Ser. No. 971,994
Int. Cl.[2] B32B *3/00, 21/08*
U.S. Cl. 428—126 **2 Claims**

1. The method of forming a trim molding strip embodying a thin plywood body capable of being bent to provide a pair of

portions extending at a right angle to each other, consisting in adhesively securing an overlay film to the outer face and sides of said body and along the marginal edges of the inner face of said body so as to leave the median area of said inner face uncovered, cutting a V-shaped groove in said inner face along



the line of desired bend with the depth of the groove extending substantially to said overlay film, and pressing said groove with a rotating V-shaped pressure roller to size the groove accurately and to bring the apex of the groove into substantial registry with the inner surface of said overlay film.

4,198,456

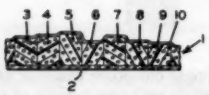
MULTI-LEVEL EMBOSSED CELLULAR SURFACE COVERING AND PROCESS FOR PRODUCING SAME

Kim M. Adams, Lititz; Martin Dees, Jr., Lancaster, and Richard P. Mazzur, Millersville, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Jul. 19, 1978, Ser. No. 926,039

Int. Cl.[2] B32B *3/26*; B05D *5/00*

U.S. Cl. 428—159 **28 Claims**



1. A process for forming a decorative, cellular, resinous surface covering having a multi-level embossed wear surface, comprising

(a) producing a printable porous substrate;

(b) pre-selecting a plurality of thermoplastic resins having different molecular weights which ultimately result in differences in their melt viscosities during a subsequent heating step;

(c) using said pre-selected resins as binders to form a plurality of thermoplastic resinous inks, at least one of said inks having a binder of a different molecular weight and therefore a different melt viscosity than that of another of said inks, the molecular weight differential between said resins being sufficient to produce a distinguishable embossed appearance in the final product by the effect of the melt viscosity difference;

(d) producing design areas in said porous substrate by applying the resinous inks to selected portions thereof in amounts and fluid viscosities predetermined to result in at least partial penetration through the thickness of the substrate at the points of application, said inks and said substrate comprising a composite structure which further includes a blowing agent; and

(e) finally heating the composite structure to fuse the resin and decompose the blowing agent, whereby the differences in the melt viscosities of the pre-selected resins used in the inks affect the expansion of the ink-containing portions of the structure by the blowing agent in varying degrees, thus producing multi-level embossed cellular design areas on the final product.

24. The product produced by the process of claim 1.

4,198,457

MOLDED ARTICLE HAVING STEREOSCOPIC DECORATIVE PATTERN AND FABRICATION PROCESS THEREFOR

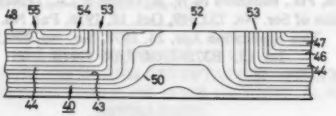
Tadao Saito; Takamitsu Nozawa, and Nobuo Yamanaka, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1975, Ser. No. 547,812

Claims priority, application Japan, Feb. 12, 1974, 49-17308; May 28, 1974, 49-59892

Int. Cl.[2] B32B *3/30*

U.S. Cl. 428—161 **9 Claims**



1. A molded article having a decorative appearance which is viewable as a stereoscopic image from the outside, comprising a substratum forming the general structure of said molded article and molded of a single monolithic material which comprises a synthetic resin selected from the group consisting of polypropylene, polyethylene, styrol, polycarbonate and acryl and an additive selected from the group consisting of a colorant, copper powders, aluminum powders, mica powders, and said synthetic resins;

a decorative pattern formed on the surface of said substratum in a manner to provide a generally smooth finish;

the decorative pattern portion configured by the flow marks of the molded material both approaching and intersecting said substratum surface inside of the trace of a predetermined pattern;

the flow marks having been formed during the molding process of said molded article;

an outer layer molded on said substratum and of a material which comprises one of said synthetic resins and one of said additives and has an appearance different from that of said substratum, in a manner to provide a generally smooth finish, said outer layer including a decorative pattern portion constituting at least partially the first-named decorative pattern portion and configured by the flow marks inside of the trace of a second predetermined pattern, which is formed during the molding process of said outer layer, the lowermost projection of the relief pattern of said substratum being positioned at such a level as to project from the outer surface of said outer layer, whereby the two coexisting decorative pattern portions can appear stereoscopic, respectively, just in the form of the two patterns as a result of the shading due to substantially radial reflection of the light incident upon said flow marks.

4,198,458

LAMINATE POLYESTER FILMS

Yukio Mitsuishi, Machida; Shigeru Shiozaki, and Hitoshi Murakami, both of Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 467,291, May 6, 1974, abandoned, and Ser. No. 478,325, Jun. 11, 1974, abandoned. This application Jul. 10, 1975, Ser. No. 594,621

Claims priority, application Japan, May 11, 1973, 48/51733; Jun. 14, 1973, 48/66315; Jun. 25, 1973, 48/70706; Jul. 5, 1973, 48/75249; Nov. 16, 1973, 48/128165; Mar. 18, 1974, 49/30074; Mar. 23, 1974, 49/32224

Int. Cl.[2] G11B *25/06*; B32B *27/36*

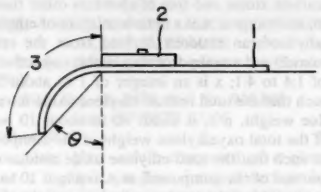
U.S. Cl. 428—212 **31 Claims**

1. A magnetic tape comprising a biaxially-stretched and heat-set polyester laminate having:

(A) an extruded first polyester film forming a first layer of

the laminate, having an intrinsic viscosity of 0.35 to 1.0, and containing a finely-divided inert compound so that the coefficient of static friction is not greater than 0.80;

(B) a co-extruded second polyester film containing no finely-divided inert compound and forming a second layer of the



laminate, having an intrinsic viscosity greater than that of film (A) by 0.02 to 0.5, and having a coefficient of static friction greater than that of film (A) by at least 0.05; and

(C) a magnetic layer coated on the external surface of layer (B), the magnetic tape being curled in the widthwise direction and layer (B) being the inside layer of the curl.

4,198,459

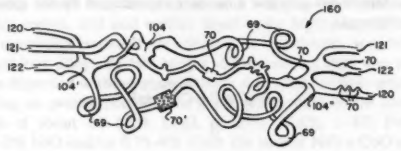
FILAMENTS WITH EVOLVED STRUCTURE AND PROCESS OF MAKING SOME

George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J. 07042

Continuation of Ser. No. 747,085, Dec. 3, 1976, abandoned. This application Aug. 31, 1977, Ser. No. 829,375

Int. Cl.² D02G *3/00*

U.S. Cl. 428—224 **18 Claims**



1. A textile multi-filament yarn comprising individual filaments cohered together at least in part by individual interfilamentary bridges, said interfilamentary bridges being disposed within said multi-filament yarn and joining the filaments thereof so as to render the yarn structurally frozen so that at least a part of the individual filaments cannot be pulled apart without breaking at least in part the structure of the multi-filament yarn, said bridges being made of the same material as said filaments, some of the segments of individual filaments between two consecutive interfilamentary bridges being of different length.

4,198,460

FIBRE MAT FOR THE DRY PRODUCTION OF COMPRESSED MOULDINGS

Günter H. Kiss, Berlin, Fed. Rep. of Germany, assignor to KCE Kiss Consulting Engineers Verfahrenstechnik GmbH, Berlin, Fed. Rep. of Germany

Filed Jun. 30, 1978, Ser. No. 921,123

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1977, 2730750

Int. Cl.² B32B *7/00*

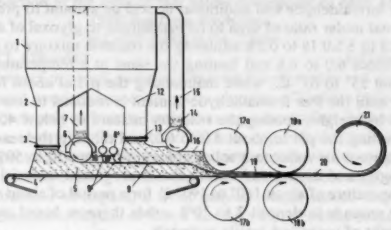
U.S. Cl. 428—284 **8 Claims**

1. A fibre mat for the dry production of compressed mouldings, said mat comprising:

a first ligno-cellulose fibre layer;

a second ligno-cellulose fibre layer; and

a support layer located between and bonded to said first and second fibre layers, said support layer being formed of intersecting discrete filaments in a loop configuration, said



filaments being interconnected at the intersection points, said support layer being deformable in its planar dimensions, said planar deformability being determined by the sum of the loop deformations.

4,198,461

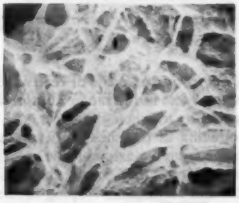
POLYMERIC FIBER MASSES, FIBERS THEREFROM, AND PROCESSES FOR PRODUCING THE SAME

Leon B. Keller, Palos Verdes Estates, and Robert K. Jenkins, Huntington Beach, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 616,747, Dec. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 481,412, Jun. 20, 1974, abandoned. This application May 15, 1978, Ser. No. 905,702

Int. Cl.² B28B *1/08*; B06B *3/00*; B32B *5/26, 5/28*

U.S. Cl. 428—288 **16 Claims**



1. A three-dimensional fibrous mass consisting essentially of crystalline, branched polymeric fibers and fiber bundles, said fiber bundles being formed of many fibrils in substantially parallel array, said fibers and fiber bundles being branched and being structurally integral each with the other at their points of branching so that the fibers and fiber bundles are randomly arranged in all directions to define a coherent mass having isotropic properties.

4,198,462

PROCESSES FOR PREPARING TEXTILE FINISHING COMPOSITION AND FINISHING TEXTILE MATERIALS THEREWITH

Carole M. Dixon, and Edward B. Lawler, both of Charlotte, N.C., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 2, 1978, Ser. No. 930,465

Int. Cl.² B05D *3/02*; B32B *27/00*

U.S. Cl. 428—290 **14 Claims**

1. A process for finishing cellulosic textile materials comprising impregnating the materials with an aqueous solution containing a suitable catalyst and a textile finishing composition prepared by reacting in a first stage an aqueous solution containing about one molar proportion of urea and about 4 to 6

molar proportions of formaldehyde at a pH of 9.5 to 10.5 and a temperature of about 60° to 80° C. until the free formaldehyde content of the reaction mixture is reduced to about 0.1 to 1.9 moles per mole of urea charged, and adjusting the pH to about 6.0 to 6.8; and in a second stage, adding glyoxal containing formaldehyde and additional urea in an amount to provide a total molar ratio of urea to formaldehyde to glyoxal of about 1:2.8 to 3.5:0.18 to 0.55; adjusting the reaction mixture to a pH of about 6.0 to 6.6 and heating the same at a temperature of about 55° to 65° C., while maintaining the pH at about 6.0 to 6.6 until the free formaldehyde content is reduced to less than 2% by weight; cooling the reaction mixture to below 40° C., adjusting the pH to about 5.0 to 6.0, and diluting the reaction mixture with water to a solids content of about 30 to 50% by weight, and drying and curing the impregnated material at a temperature of about 160° to 190° C. for a period of about 45 to 150 seconds to deposit 2 to 10% solids thereon, based on the weight of untreated textile materials.

8. The finished cellulosic textile material of claim 1.

4,198,463

TOUGHENED GLASS SHEETS

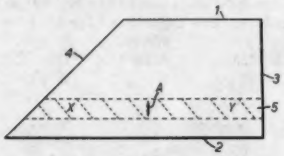
Geoffrey Greenhalgh, Orrell, England, assignor to Triplex Safety Glass Company Limited, Birmingham, England

Filed Jun. 19, 1978, Ser. No. 916,559

Claims priority, application United Kingdom, Jun. 23, 1977, 26361/77

Int. Cl.² C08B *27/00*

U.S. Cl. 428—332 **5 Claims**



1. A glass sheet for use as a side or rear window for a motor vehicle and of thickness in the range 2.5 mm to 4.0 mm which sheet is quenched to toughen the sheet to a relatively high degree by producing in the sheet an average central tensile stress in the range from a maximum of 62 MN/m^2 for all glass thickness from 2.5 mm to 4.0 mm to a minimum of 56.5 MN/m^2 for 2.4 mm thick glass varying inversely with thickness down to a minimum of 44.0 MN/m^2 for 4.0 mm thick glass, the glass sheet having at least one strip-shaped region of more highly toughened glass in which the central tensile stress is in the range from 2 MN/m^2 to 5 MN/m^2 greater than the average central tensile stress in the relatively highly toughened sheet, and in which region there are major and minor principal stresses acting in the plane of the glass sheet, the difference between said major and minor principal stresses in said region being in the range 5 MN/m^2 to 25 MN/m^2, the number and location of said strip-shaped regions of more highly toughened glass being sufficient that upon fracture there is an absence of splines of more than 6 cm in length in the glass sheet.

4,198,464

FIBER LUBRICANTS BASED UPON ETHYLENE OXIDE CAPPED POLYETHERS OF TETRAHYDROFURAN AND ETHYLENE OXIDE

Robert B. Login, Woodhaven; William K. Langdon, Grosse Ile, and Ronald L. Camp, Riverview, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed May 26, 1978, Ser. No. 909,879

Int. Cl.² D02G *3/36*

U.S. Cl. 428—361 **7 Claims**

1. A lubricated synthetic textile fiber comprising a polyester, polyamide, or polyacrylic fiber, or mixtures thereof and present on the surface thereof a lubricating amount of an oxyalkylene compound of the formula

$$Y-\left[(A)_n-(C_2H_4O)_m-H\right]_x$$

wherein Y is the residue formed by the removal of x atoms of active hydrogen from an initiator having a total of not more than 20 carbon atoms and free of elements other than carbon, hydrogen, and oxygen; A is a heteric mixture of ethylene oxide and tetrahydrofuran residues derived from the reaction of ethylene oxide and tetrahydrofuran in the respective ratio by weight of 1:4 to 4:1; x is an integer of 1 to about 5; n is an integer such that the total heteric ethylene oxide-tetrahydrofuran residue weight, n x, is about 90 to about 10 percent by weight of the total oxyalkylene weight of the compound; m is an integer such that the total ethylene oxide residue weight in the cap portion of the compound, m x, is about 10 to about 90 percent by weight of the total oxyalkylene weight of the compound; and the total molecular weight of the said heteric mixture, n x, is about 500 to about 6000.

4,198,465

PHOTOCURABLE ACRYLIC COATED POLYCARBONATE ARTICLES

James E. Moore, Clifton Park; Ona V. Orkin, and Siegfried H. Schroeter, both of Schenectady, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 1, 1978, Ser. No. 956,872

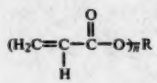
Int. Cl.² C08F *2/50*; B32B *27/30*; B29D *11/00*; B05D *3/06*

U.S. Cl. 428—409 **32 Claims**

1. A shaped article having improved abrasion resistance comprising a polycarbonate substrate coated with an ultraviolet light curable coating composition consisting essentially of:

(i) a photoinitiator;

(ii) at least one ultraviolet light curable cross-linkable polyfunctional acrylate monomer represented by the general formula

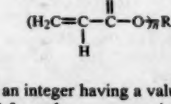


wherein n is an integer having a value of from 2 to 4, and R is selected from the group consisting of a n valent aliphatic hydrocarbon residue, n valent substituted aliphatic hydrocarbon residue, n valent aliphatic hydrocarbon residue containing at least one other linkage, and n valent substituted aliphatic hydrocarbon residue containing at least one ether linkage; and

(iii) resorcinol monobenzoate.

19. A method for providing a mar resistant tenaciously and durably adhered hard coating onto the surface of a solid substrate comprising:

(i) applying a thin layer of a coating composition onto the surface of said solid substrate, said coating composition consisting essentially of (a) at least one polyfunctional acrylate monomer represented by the general formula



wherein n is an integer having a value of from 2 to 4, and R is selected from the group consisting of a n valent aliphatic hydrocarbon residue, a n valent substituted aliphatic hydrocarbon residue, a n valent aliphatic hydrocarbon residue containing at least one ether linkage, and a n valent substituted aliphatic hydrocarbon residue containing at least one ether linkage, (b) a photoinitiator, and (c) resorcinol monobenzoate; and

(ii) exposing said coated substrate under an inert atmosphere to ultraviolet light for a period of time sufficient to polymerize and crosslink said polyfunctional acrylate monomers, thereby forming said hard coating.

4,198,466

GLASSES AND GLASS-CERAMICS WITH METAL ALLOY SURFACES

Richard F. Reade, Corning, N.Y., assignor to Corning Glass Works, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,808
Int. Cl.[2] B32B *17/06*
U.S. Cl. 428—410 **3 Claims**

1. A composite glass article composed of a glassy body portion and a highly crystalline, integral surface layer not exceeding several thousand angstroms in thickness demonstrating ferromagnetic properties, said surface layer consisting essentially of cobalt-iron, nickel-iron, or cobalt-iron-nickel alloy crystals having diameters less than one micron dispersed within a glassy matrix, said composite glass article having an overall composition consisting essentially, in weight percent on the oxide basis, of about 1–17% R_2O, wherein R_2O consists of Li_2O and/or Na_2O in the following indicated proportions of 2.5–5.5% Li_2O and 1–16% Na_2O, 1–3.75% FeO, 0.75–5% RO, wherein RO consists of NiO and/or CoO in the following indicated proportions of 0.75–3% NiO and 0.75–4% CoO, 20–32% Al_2O_3, and 50–72% SiO_2.

3. A composite glass-ceramic article composed of an interior portion and an integral surface layer not exceeding several thousand angstroms in thickness demonstrating ferromagnetic properties, said interior portion being highly crystalline and consisting essentially of beta-spodumene solid solution crystals having compositions within the $Li_2O.Al_2O_3.n\ SiO_2$ system, wherein n will vary between about 3.5–8, dispersed within a glassy matrix, and said surface layer being highly crystalline and consisting essentially of cobalt-iron, nickel-iron, or cobalt-nickel-iron alloy crystals having diameters less than one micron dispersed within a glassy matrix, said glass-ceramic article having an overall composition in weight percent on the oxide basis of about 2.5–5.5% Li_2O, 16–27% Al_2O_3, 1–4% FeO, 0.5–3% NiO and/or 0.75–4% CoO, the sum of NiO + CoO not exceeding about 5%, 40–76% SiO_2, and 1.75–6% TiO_2 in those articles wherein beta-spodumene solid solution is the predominant crystal phase.

4,198,467

GLASS ARTICLES WITH $NiFe_2O_4$, $CoFe_2O_4$, OR $(Co,Ni)Fe_2O_4$ SURFACE LAYERS

Richard F. Reade, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,809
Int. Cl.[2] B32B *17/06*
U.S. Cl. 428—410 **2 Claims**

1. A composite glass article composed of a glassy body portion and an integral surface layer of not more than several thousand angstrom thickness demonstrating ferrimagnetic properties, said surface layer consisting essentially of very fine-grained $NiFe_2O_4$, $CoFe_2O_4$, or (Co, Ni) Fe_2O_4 crystallites dispersed within a glassy matrix, said composite glass article having an overall composition consisting essentially, in weight percent on the oxide basis, of about 1–17% R_2O, wherein R_2O consists of Li_2O and/or Na_2O in the following indicated proportions when either is present alone of 2.5–5.5% Li_2O and 1–16% Na_2O, 1–3.75% FeO, 0.75–5% RO, wherein RO consists of NiO and/or CoO in the following indicated proportions when either is present alone of 0.75–3% NiO and 0.75–4% CoO, 20–32% Al_2O_3, and 50–72% SiO_2.

4,198,468

IMPACT RESISTANT LAMINATE

Richard E. Molari, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Oct. 19, 1978, Ser. No. 952,678
The portion of the term of this patent subsequent to May 31, 1994, has been disclaimed.
Int. Cl.[2] B32B *9/04, 27/36*
U.S. Cl. 428—412 **6 Claims**

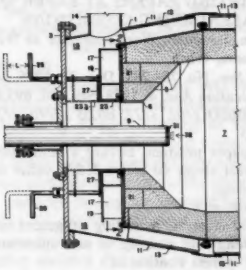
1. Impact or shock resistant laminate having improved spall resistance consisting essentially of a plurality of laminae including a back polycarbonate lamina having a controlled thickness of from about 30 mils to about 220 mils opposite the direction of impact or shock, said back polycarbonate lamina having a mar-resistant coating on the exposed surface thereof opposite the direction of impact, a front polycarbonate lamina facing the direction of impact or shock having a mar-resistant coating on the exposed surface thereof facing the direction of impact, and at least one acrylic resin lamina disposed intermediate said back and front polycarbonate laminae, the back and front polycarbonate laminae being bonded to said acrylic resin lamina by a compatible adhesive.

4,198,469

METHOD FOR THE MANUFACTURE OF CARBON BLACK

Karel R. Dahmen, Houston, and John M. Clay, Dumas, both of Tex., assignors to Continental Carbon Company, Houston, Tex.

Continuation-in-part of Ser. No. 780,218, Mar. 23, 1977, abandoned. This application Dec. 30, 1977, Ser. No. 864,161
Int. Cl.[2] C01B *31/02;* C09C *1/48*
U.S. Cl. 423—450 **3 Claims**



1. In a process for manufacturing carcass grades of oil furnace carbon black in which a carbon black feedstock is introduced into a elongate reactor into a reaction zone heated by hot combustion gases from the burning of a fuel with air, the improvement which comprises swirling at least a portion of the air before it contacts the fuel and controlling the Swirl Ratio of the air so as to control the structure of the resulting carbon black, said Swirl Ratio being controlled within the values wherein an increase in Swirl Ratio results in an increase in structure and a decrease in Swirl Ratio results in a decrease in structure wherein the Swirl Ratio, S is defined as:

$$S = \frac{1}{1-\psi} \cdot \frac{\tan \cdot \delta}{1 + \tan \cdot \delta \cdot \tan \cdot (180/z)^{\circ}}$$

where

$\psi = zt/2\pi R1 \cos \delta$

δ = angle of vane of radius

R_1 = radius of inner diameter of vane cascade, inches

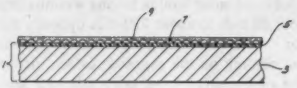
t = thickness of vanes, inches

z = number of vanes.

4,198,470
BASE PLATE AND LITHOGRAPHIC PLATE PREPARED BY SENSITIZATION THEREOF

Jim D. Meador, Bridgeton, and Edward H. Parker, Ballwin, both of Mo., assignors to Western Litho Plate & Supply Co., St. Louis, Mo.

Division of Ser. No. 834,238, Sep. 19, 1977, which is a continuation of Ser. No. 584,880, Jun. 9, 1975, abandoned. This application Mar. 7, 1978, Ser. No. 884,177
Int. Cl.[2] G03F 7/02; G03C 1/94, 1/52
U.S. Cl. 428—457 9 Claims



1. A base plate adapted to be coated with a light-sensitive diazo resin comprising a substrate comprising a metal support and a barrier layer having a water-wettable, hydrophilic surface over said support, and over said substrate and in direct contact with said surface on oleophilic layer comprising an oleophilic ink-receptive organic resin adapted to receive a light-sensitive coating comprising a water-soluble diazo resin sensitizer and permeable to said sensitizer so that it may penetrate substantially through said layer to establish sufficient contiguity between said diazo resin and said substrate so that both said light-sensitive coating and said organic resin layer become anchored to said substrate in the areas of exposure when said light-sensitive coating is exposed to light.

4,198,471
CONTROLLED GLOSS PIGMENT SYSTEM FOR COATING PRINTING PAPERS AT PAPER MACHINE CALENDERING CONDITIONS

George R. Nelson, Issaquah, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Continuation of Ser. No. 754,791, Dec. 27, 1976, abandoned. This application Apr. 4, 1978, Ser. No. 893,647
Int. Cl.[2] B05D 3/02, 3/12; B32B 27/10, 27/42
U.S. Cl. 428—513 2 Claims

2. A printing paper product, having a minimum Gardener 75° gloss of at least about 40 and a K&N value of less than about 60, comprising:

a paper substrate; and

a coating on said substrate including a pigment system and a binder attaching said coating to said substrate, wherein said pigment system consists of

a styrene polymer in the form of a particulate of substantially spherical shape having a particle size range of about 0.03–0.5 micron in diameter having a glass transition temperature of greater than about 105° C. and

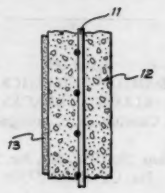
a urea-formaldehyde polymer that is insoluble, infusible and nonporous in the form of a particulate of substantially spherical shape having a particle size range of about 0.1–15 microns in diameter, wherein said thermosetting polymer comprises at least about 25% but less than about 75% of the total pigment system.

4,198,472
SURFACE FINISHES FOR RIGID STRUCTURES

Alvin Brown, Redding, Calif., assignor to Kinbrace Pty. Ltd., New South Wales, Australia

Filed Feb. 17, 1978, Ser. No. 878,806
Int. Cl.[2] B05D 3/00, 3/12; B32B 9/04
U.S. Cl. 428—538 11 Claims

8. A reinforced concrete structure having a surface coating applied thereto, the surface coating comprising a mix of aggregate and portland-type cement, particles near the surface of the coating layer being partially exposed and the coating layer having been formed from a mix comprising aggregate with particle sizes no less than about ¼ inch diameter and all passing through a screen having a mesh of one-half inch, and portland-type cement in a ratio of approximately 1:1 by volume, the mix being substantially free of fines and having a slump of the order of 1 inch, to permit pumping said mix, the coating layer having



been compacted progressively by localized pressure followed by washing with a fine water spray to remove excess cement found at the surface of the layer after the application of localized pressure.

4,198,473
RESPOT CELL PADS FOR AUTOMATIC BOWLING MACHINE

Thomas M. Camilleri, 277 Avenue W, Brooklyn, N.Y. 11223

Continuation-in-part of Ser. No. 724,632, Sep. 20, 1976, abandoned, which is a continuation-in-part of Ser. No. 554,908, Mar. 3, 1975, abandoned. This application Jan. 9, 1978, Ser. No. 868,194
Int. Cl.[2] B32B 3/26, 5/18
U.S. Cl. 428—542 9 Claims

1. In a block-shaped resilient actuator pad or gripper pad for a pinsetter automatic bowling machine, the improvement wherein the actuator pad or gripper pad is formed of a flexible, resilient sponge rubber having a density of from about 26 to about 40 pounds per cubic foot.

4,198,474
SEAWATER BATTERY

Pinakin M. Shah, Horsham, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 26, 1979, Ser. No. 15,092
Int. Cl.[2] H01M 6/34
U.S. Cl. 429—6 10 Claims

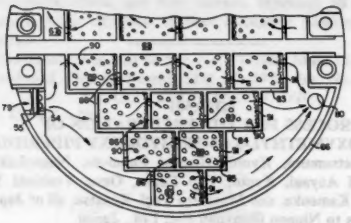
1. An electric cell activated upon immersion in a solvent comprising:

housing means having a cavity formed therein;

electrode means spatially positioned within the cavity;

electrolyte mixing means connected to said housing means forming a discrete chamber separate from the cavity and including inlet means at one end of the chamber for receiving the solvent, electrolyte pellets evenly distributed within the chamber for dissolution in the solvent to form a uniform dispersion of electrolyte in solution, and passage

means at the opposite end of the chamber for directing said solution into said cavity; and



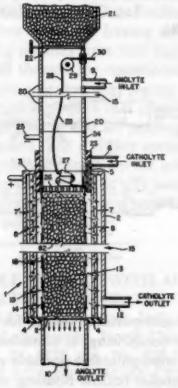
said electrode means and said pellets consisting of materials capable of producing electrical energy when the electrodes are simultaneously exposed to the solution.

4,198,475

METHODS AND APPARATUS FOR GENERATING HEAT AND ELECTRICAL ENERGY FROM ALUMINUM

Solomon Zaromb, Newark, N.J., assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 843,155, Oct. 17, 1977, Pat. No. 4,150,197. This application Jun. 20, 1978, Ser. No. 917,406
Int. Cl.² H01M *8/08*
U.S. Cl. 429—15 **15 Claims**



1. An apparatus for generating heat and electrical energy from the consumption of aluminum products which comprises:

(a) a reaction chamber containing an aqueous electrolyte solution, the reaction chamber being adapted for introduction of aluminum pieces of various shapes and sizes for effecting a chemical reaction between said aqueous electrolyte and said aluminum pieces to yield thermal and electrical energy and an aluminum hydroxide reaction product;

(b) means for feeding said aluminum pieces into said reaction chamber in small quantities upon demand;

(c) means for removing the heat generated in said chamber as a result of said reaction; and

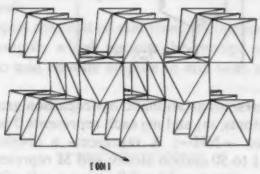
(d) means for maintaining said aluminum pieces in the reaction chamber as a packed-bed by exertion of a positive downward pressure thereon.

4,198,476

NONAQUEOUS SECONDARY CELL USING METAL OXIDE ELECTRODES

Francis J. Di Salvo, Jr., Florham Park, and Donald W. Murphy, Warren, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 8, 1978, Ser. No. 940,722
Int. Cl.² H01M *4/48*
U.S. Cl. 429—194 **10 Claims**



1. A nonaqueous secondary cell comprising a negative electrode, an electrolyte, and a positive electrode: Characterized in that said positive electrode comprises an electrically conductive rutile structure transition metal dioxide, said metal dioxide has a nominal atom composition MO_2, M being at least one member selected from groups VB through VIII of the periodic table having a unit cell volume of at least 60 Angstroms^3.

4,198,477

METHOD OF USING ELECTROSTATOGRAPHIC TONER COMPOSITION WITH SURFACTANT

Meurig W. Williams, and Christopher J. AuClair, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 773,083, Feb. 28, 1977, Pat. No. 4,139,483. This application Nov. 20, 1978, Ser. No. 962,529
Int. Cl.² G03G *13/08*
U.S. Cl. 430—120 **10 Claims**

1. An electrostatographic imaging process comprising the steps of providing an electrostatographic imaging member having a recording surface, forming an electrostatic latent image on said recording surface, and contacting said electrostatic latent image with a developer mixture comprising finely-divided toner particles electrostatically clinging to the surface of carrier particles having an average particle diameter of between about 50 microns and about 1,000 microns, said toner particles comprising a colorant, a thermoplastic resin, and a surface active additive dispersed in said toner particles, said surface active additive being capable of providing a positive triboelectric charging potential to said toner particles, said surface active additive being selected from highly fluorinated materials having an ionic group, said ionic group being selected from a cationic group and an anionic group, whereby at least a portion of said finely-divided toner particles is attracted to and deposited on said recording surface in conformance with said electrostatic latent image.

4,198,478

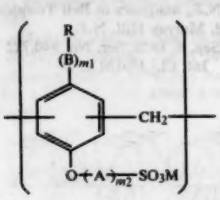
METHOD FOR DISPERSING A PHOTOGRAPHIC ADDITIVE

Masakazu Yoneyama; Jiro Yamaguchi, and Takeshi Mikami, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 10, 1978, Ser. No. 904,664
Claims priority, application Japan, May 10, 1977, 52-53548
Int. Cl.² G03C *1/40, 1/84, 1/10, 1/48*
U.S. Cl. 430—449 **9 Claims**

1. A method for dispersing at least one oil-soluble photographic additive in water or a hydrophilic colloid composition which comprises dissolving said photographic additive in at least one organic solvent and dispersing the resulting organic solvent solution of the photographic additive in water or in a

hydrophilic colloid composition in the presence of a surface active polymer comprising (a) a homopolymer of units represented by the formula (I):



(I)

wherein R represents an aliphatic hydrocarbon group having 4 to 22 carbon atoms; m_1 and m_2 each represents 0 or 1; B represents —O— or —NH—; A represents a divalent aliphatic group having 1 to 50 carbon atoms; and M represents a hydrogen atom or a cation capable of forming a salt with a sulfonic acid group, or (b) a copolmyer containing at least 5 mol% of units represented by the formula (I) above and the balance of divalent units copolymerizable therewith and comprising at least one of a benzene ring having a methylene group attached thereto and a naphthalene ring having a methylene group attached thereto, wherein the surface active polymer is in the water, hydrophilic colloid or organic solvent.

4,198,479

REPLACEMENT OF ANIMAL SERUM PROTEINS BY HUMAN ALBUMIN FOR GROWTH AND INTERFERON PRODUCTION BY NAMALVA CELLS

Alfred A. Tytell; Edgar Scattergood, both of Lansdale, and Arthur K. Field, North Wales, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 30, 1979, Ser. No. 25,305
Int. Cl.[2] A61N *1/02*; A61K *45/02*
U.S. Cl. 435—2 **4 Claims**

1. An improved process for the preparation of interferon which comprises

(a) growing human lymphoblastoid cells in medium for 4 to 5 days and obtaining a final cell density of about 2×10^6 cells/ml; and

(b) diluting said culture with fresh medium to a cell density of about 1×10^6 cell/ml; and

(c) inducing the production of interferon in the culture by the addition of Sendai virus; wherein the improvement comprises replacing animal serum proteins in the said medium in Step a) and b) by human albumin.

4,198,480

PROCESS FOR PRODUCING ANTIBIOTIC BAUMYCIN COMPLEX AND COMPONENTS

Hamao Umezawa; Tomio Takeuchi; Masa Hamada, all of Tokyo; Masaaki Ishizuka, Ohtaku; Hiroshi Naganawa, Tokyo; Toshikazu Oki, Kamakurashi, and Taiji Inui, Chigasakishi, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Division of Ser. No. 797,201, May 16, 1977, Pat. No. 4,147,778. This application Mar. 15, 1978, Ser. No. 886,987
Claims priority, application Japan, May 31, 1976, 51/63810
Int. Cl.[2] C12P *19/56*; C12R *1/465*
U.S. Cl. 435—78 **4 Claims**

1. A process for producing baumycin A_1 which comprises cultivating a baumycin A_1-producing strain of Streptomyces selected from the group consisting of *Streptomyces coeruleorubidus* ME 130-A4 (FERM-P3540, ATCC 31276), *Streptomyces peuceticus subsp. carneus* ATCC 21354, *Streptomyces coeruleorubidus* ATCC 13740, *Streptomyces peuceticus subsp. caestus* NRRL B-5337, *Streptomyces peuceticus* NRRL B-3826 and *Streptomyces coeruleorubidus* NRRL B-3045 in an aqueous nutrient medium under submerged aerobic conditions until a substantial amount of baumycin A_1 is produced by said organism in said culture medium and recovering the baumycin A_1 from the culture medium substantially free of substances coproduced therewith.

4,198,481

PROCESS FOR THE PREPARATION OF 2-HYDROXYMETHYL-3,4,5-TRIHYDROXY PIPERIDINE

Shingo Matsumura, Kyoto; Hiroshi Enomoto, Nagaokakyo; Yoshiaki Aoyagi, Kyoto; Yoji Ezure, Otsu; Yoshiaki Yoshikuni, Kameoka, and Masahiro Yagi, Kusatsu, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Filed Nov. 15, 1978, Ser. No. 960,852
Claims priority, application Japan, Nov. 21, 1977, 52-140126
Int. Cl.[2] C12D *13/02*
U.S. Cl. 435—122 **4 Claims**

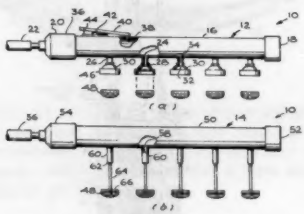
1. Process for the preparation of the compound 2-hydroxymethyl-3,4,5-trihydroxypiperidine which comprises culturing a 2-hydroxymethyl-3,4,5-trihydroxypiperidine-producing strain of the genus Streptomyces in the presence of a carbon source and nitrogen source until substantial production of said compound has occurred and isolating said compound from the culture medium.

4,198,482

RAPID ASPIRATION SYSTEM FOR CULTURE MEDIA

Charles J. Homer, Spring Valley, Calif., assignor to Dynasciences Corporation, Los Angeles, Calif.

Filed Jun. 21, 1978, Ser. No. 917,714
Int. Cl.[2] C12M *3/00*
U.S. Cl. 435—284 **5 Claims**



1. Improved rapid portable system for culture media aspiration, said system comprising, in combination:

a. a first hand-manipulatable portable manifold comprising a elongated tubular hollow housing, and a plurality of stubs connected to said housing at spaced intervals and extending outwardly from said housing, and defining a plurality of openings communicating with the interior of said housing, said stubs having at their free outer ends suction cups with central openings therein communicating with said stub openings, said manifold also including suction means and suction-relieving means connected to said housing for delivery of suction to said cups; and,

b. a second hand-manipulatable portable manifold having a hollow elongated tubular housing and a plurality of aspiration conduits of equal number and spatial orientation to said stubs and connected to said housing at spaced intervals, said conduits extending outwardly from said housing, said manifold including suction means communicating through said housing with said aspiration conduits for aspirating culture media.

4,198,483

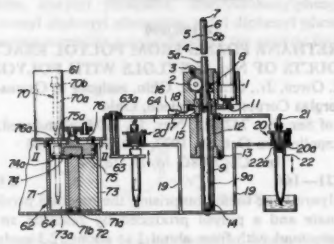
PIPETTE EXCHANGE APPARATUS

Shinroku Sogi; Makoto Yoshinaga, both of Hachioji; Toshio Shinohara, Chofu, and Ikuo Tawara, Hachioji, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 777,336, Mar. 14, 1977, abandoned. This application Mar. 15, 1978, Ser. No. 886,658

Int. Cl.[2] C12B 1/00; C12K 1/10

U.S. Cl. 435—286 3 Claims



1. A pipette exchange apparatus for use in a system for automatically culturing a biotissue or a cell comprising culturing atmosphere housing means, a holding member located in said housing means, a pipette mounting device for mounting pipettes one after another in said holding member in said housing means for effecting automatic culturing, a pipette supply device for supplying pipettes in a one-by-one manner, said pipette supply device located outside said housing means and a pipette feeding device arranged to receive pipettes one after another from said pipette supply device outside said housing means for feeding the pipettes to said pipette mounting device within said housing means, said pipette feeding device comprises a bottomed hollow container having an opening in the lid thereof for receiving pipettes from said supply means, and an outlet in a side wall thereof for communicating a pipette with said pipette mounting device, said pipette feeding device further having a fixed guide plate in said container, said guide plate having a guide groove therein for holding and moving a pipette in a guided manner, and a rotary member within said container for shielding the atmosphere at the inlet side from the interior of the culturing atmosphere of said housing means and for moving a pipette along said groove between the inlet side and the outlet side of said container.

4,198,484

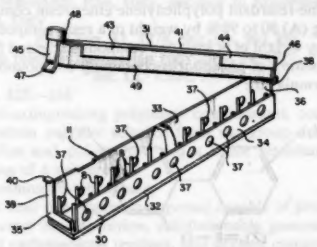
CUVETTE AMPULE FOR USE WITH AUTOMATIC ANALYZER APPARATUS

Allen S. Reichler, and Larry E. Swaton, both of Dallas, Tex., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jul. 26, 1978, Ser. No. 928,114

Int. Cl.[2] C12M 1/24; G01N 21/24; C12Q 1/04

U.S. Cl. 435—296 10 Claims



1. A sealed cuvette ampule for use with an optical scanning analyzer apparatus of biological fluids, said ampule comprising:

(a) a bottom portion having a pair of spaced aligned substantially flat walls;

(b) said flat walls comprising a material which permits the passage of light beams through said walls;

(c) a neck section extending from the top of said bottom portion;

(d) a removable stem connected to said neck section; and,

(e) said ampule further including a nutrient enclosed within said ampule,

whereby upon removal of said stem, an opening is provided in said ampule which permits the receipt of a biological fluid into said cuvette ampule to mix with said nutrient.

4,198,485

FIRE RESISTANT, EXPANDED STYRENE POLYMER MATERIAL

Fred J. Stark, Jr., Minnetonka, Minn., assignor to Rubber Research Elastomerics, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 698,057, Jun. 21, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 846,690

Int. Cl.[2] C08J 9/22

U.S. Cl. 521—55 18 Claims

1. A non-combustion-supporting insulating material which, upon application thereto of a flame, disintegrates to a fine ash, the material comprising a mass of styrene polymer beads, the particles having individual coatings of expanded dried water glass adhering the particles into a mass having a bulk density of from about 1.5 lbs. to about 2 lbs. per cubic foot, the mass containing from about 30 to about 80 percent of styrene polymer solids and about 20 to about 70 percent of dried water glass, by weight.

4,198,486

FLAMEPROOF POLYSTYRENE FOAM AND PROCESS FOR THE MANUFACTURE THEREOF

Wolfgang Mylich, Sulzbach, and Walter Albert, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 15, 1979, Ser. No. 20,838

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811951

Int. Cl.[2] C08J 9/14

U.S. Cl. 521—79 11 Claims

1. A process for the manufacture of flameproof styrene polymer foams which comprises melting in an extruder a granular mixture consisting of 100 parts by weight of styrene polymer and 150 to 250 parts by weight of aluminum hydroxide having a grain size of from 20 to 100 μm and a specific surface of below 1.0m^2/g, and containing from 0 to 30 parts by weight of known flameproofing agents, gassing the molten mixture with 3 to 15% by weight, relative to the mixture, of a physical expanding agent having a boiling point in the range of from 273 to 323 K, and, after thorough homogenization extruding them to obtain foamed articles.

4,198,487

PROCESS FOR THE PRODUCTION OF INORGANIC-ORGANIC SYNTHETIC FOAM MATERIALS

Hans-Joachim Scholl, Cologne; Dieter Dieterich, Leverkusen, both of Fed. Rep. of Germany; Peter Markusch, New Martinsville, W. Va., and Rainer Welte, Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 1, 1978, Ser. No. 930,123

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1977, 2734690

Int. Cl.[2] C08G *18/14, 18/08, 18/30*

U.S. Cl. 521—122 8 Claims

1. A process for the production of inorganic-organic synthetic foam materials having high strength, elasticity, dimensional stability under heat, and flame resistance, consisting of a polymer-polysilicic acid gel composite material in the form of a solid/solid xerosol, said process comprising mixing

(a) an organic polyisocyanate,

(b) an aqueous basic solution and/or an aqueous basic suspension having an inorganic solid content of from 20 to 80% by weight, preferably from 30 to 70% by weight,

(c) an organic compound containing at least one isocyanate reactive hydrogen atom and at least one non-ionic-hydrophilic group and

(d) optionally catalysts and other additives

and leaving the resulting mixture to react, characterized in that components (a) and (b), optionally with the addition of part or all of component (d) are first mixed together to form a stable primary dispersion and thereafter component (c), optionally with the addition of all or part of component (d), is added to form the final dispersion which is allowed to foam.

4,198,488

POLYMER-POLYOLS AND POLYURETHANES BASED THEREON

Kenneth Drake, Charleston; Kenneth L. Hoy, and Carl G. Seefried, Jr., both of Saint Albans, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 26, 1978, Ser. No. 919,064

Int. Cl.[2] C08G *18/14, 18/63;* C08K *5/06*

U.S. Cl. 521—137 19 Claims

1. A fluid, stable polymer/polyol which comprises: (1) from about 60 to about 90 weight percent of an organic polyol medium consisting essentially of at least one normally liquid polyol and (2) from about 10 to about 40 weight percent of an interpolymer of (a) a minor amount of polymerized ethylenically unsaturated dicarboxylic acid anhydride and (b) a major amount of at least one different polymerized ethylenically unsaturated monomer, said interpolymer being in the form of particles that are stably dispersed in the polyol and said weight percents being based on the total weight of the polymer and polyol.

18. A method for producing a polyurethane foam which comprises reacting: (a) a polymer/polyol as claimed in claim 1, and (b) an organic polyisocyanate in contact with (c) a catalyst for the reaction of (a) and (b), (d) a blowing agent, and (e) a foam stabilizer.

4,198,489

POLYURETHANE FOAMS PREPARED FROM HIGHLY STABLE LIQUID CARBODIIMIDE-CONTAINING 4,4'-DIPHENYLMETHANE DIISOCYANATE

Robert L. Schaaf, Wyandotte; Peter T. Kan, Plymouth, and Moses Cenker, Trenton, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 30, 1978, Ser. No. 955,780

Int. Cl.[2] C08G *18/14*

U.S. Cl. 521—160 9 Claims

1. A polyurethane foam prepared by the reaction in the presence of a blowing agent of an organic compound having from two to eight active hydrogen atoms and an equivalent weight of from 500 to 5000 with a liquid 4,4'-diphenylmethane diisocyanate composition having an isocyanate content of from 20 to 32 weight percent and containing diphenylmethane diisocyanate-carbodiimide adducts prepared by heating 4,4'-diphenylmethane diisocyanate or crude mixtures thereof at a temperature between 180° C. and 250° C. for a period of from one hour to ten hours in the presence of from 0.001 part to 0.05 part per 100 parts of said diisocyanate of tris(chloromethyl)-phosphine oxide and thereafter equilibrating the adduct formation.

4,198,490

POLYURETHANE FOAMS FROM POLYOL REACTION PRODUCTS OF N-α-ALKYLOLS WITH POLYOLS

Gwilym E. Owen, Jr., Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 742,811, Nov. 18, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 841,094

Int. Cl.[2] C08G *18/14, 18/54*

U.S. Cl. 521—166 2 Claims

1. A polyurethane foam comprising the reaction product of an isocyanate and a polyol produced by reacting an N-α-alkylol compound with from about 2 to about 12.5 moles, per mole of said N-α-alkylol compound, of a polyhydroxyl-containing compound said N-α-alkylol compound being trimethylolmelamine and said hydroxyl-containing compound being propylene glycol.

4,198,491

PROCESS FOR THE PRODUCTION OF ORGANIC HALOSILICON ACID RESINOUS PRODUCTS AND THEIR REACTION PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 845,464, Oct. 25, 1977, Pat. No. 4,120,937. This application May 22, 1978, Ser. No. 908,106

Int. Cl.[2] C08F *283/12;* C08G *8/04;* C08L *91/00;* C01B *25/01*

U.S. Cl. 525—56 35 Claims

1. The process for the production of polyol halosilicon acid resinous products and their reaction products by the following steps:

(a) adding slowly and simultaneously 0.25 to 2 mols of a silicon acid, 0.25 to 2 mols of a polyol and 1 mol of a silicon halide while

(b) agitating at a temperature below the boiling temperature of the mixture for 1 to 2 hours; thereby

(c) producing a polyol halosilicon acid resinous product.

4,198,492

FLAME-RETARDANT POLYPHENYLENE ETHER RESIN COMPOSITION

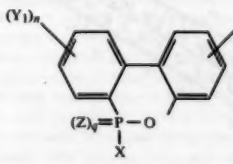
Shinichi Izawa, Tokyo; Jun Sugiyama, Yokohama, and Atsuo Nakanishi, Kanagawa, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Sep. 27, 1977, Ser. No. 837,629

Int. Cl.[2] C08K *5/34, 5/52, 5/53*

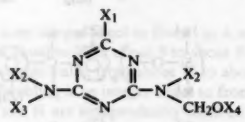
U.S. Cl. 525—134 16 Claims

1. A flame-retardant polyphenylene ether resin composition comprising (A) 80 to 98% by weight of a resin component, (B) 1 to 18% by weight of at least one compound selected from the group consisting of phosphorus-containing compounds of the generic formula (B):



(B),

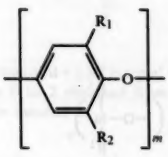
where X is a hydrogen atom, a hydroxyl group, an amino group, a halogen atom, an alkyl group of 1 to 10 carbon atoms, an alkoxy group of 1 to 10 carbon atoms, an alkylthio group of 1 to 10 carbon atoms, an aryloxy group of 6 to 10 carbon atoms or a hydroxyl-substituted aryloxy group of 6 to 10 carbon atoms, Y_1 and Y_2 are each an alkyl of 1 to 8 carbon atoms, an alkoxy group of 1 to 8 carbon atoms or an aryl group, Z is an oxygen or sulfur atom, n and p are each an integer of the value of from 0 to 4 and q is an integer of the value of 0 or 1, and (C) 1 to 18% by weight each of at least one compound selected from the group consisting of (a) triphenyl phosphite, tricresyl phosphite, trixylyl phosphite, tris(cyclohexylphenyl) phosphite, cresyl diphenyl phosphite, xylyl diphenyl phosphite, (b) triazine ring-containing compounds of the generic formula (C):



(C),

(d) melamine, and (e) benzoguanamine, where X_1 is a phenyl group

X_2 and X_3 are each a hydrogen atom or CH_2OX_5, X_4 and X_5 are each a hydrogen atom, CH_3, C_2H_5, C_3H_7 or C_4H_9, said resin component comprising a styrene type compound grafted polyphenylene ether copolymer and a styrene type polymer other than a styrene type compound grafted polyphenylene ether copolymer and containing 20 to 80% by weight, based on the resin component, of a polyphenylene ether of the generic formula (A):



(A),

where R_1 and R_2 are each an alkyl group of 1 to 4 carbon atoms and m is the degree of polymerization, said styrene type compound grafted polyphenylene ether copolymer having 20 to 200 parts by weight of a styrene type compound grafted onto 100 parts by weight of said polyphenylene ether.

4,198,493

SELF-EXTINGUISHING POLYMERIC COMPOSITIONS

Franco Marciandi, Rho, Italy, assignor to Montedison S.p.A., Milan, Italy

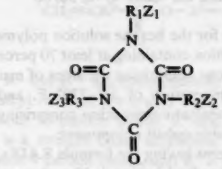
Filed Sep. 11, 1978, Ser. No. 941,396
Claims priority, application Italy, Sep. 14, 1977, 27520 A/77
Int. Cl.[2] C08L 23/00
U.S. Cl. 525—164 **5 Claims**

1. Self-extinguishing polymeric compositions, comprising a hydrocarbon polymer selected from the group consisting of polyolefins and polystyrene and a flame retardant additive consisting of a mixture of:

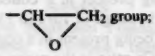
(A) ammonium phosphate;

(B) at least one organic compound capable of providing, by thermal decomposition, uninflammable gaseous products and carbonaceous residues, said organic compound being selected from the group consisting of melamine, benzoguanamine, hydroxy-amino-s-triazines, cyanuric acid, dicyandiamide, reaction products of any of the foregoing with formaldehyde, and aliphatic polyalcohols having not less than three hydroxy groups; and

(C) an ester of isocyanuric acid having the general formula:



in which R_1, R_2, R_3 either like or unlike one another, are linear or branched alkylene groups having 1 to 6 chain-linked carbon atoms, and Z_1, Z_2, Z_3 are —OH or



the (B)/(C) ratio by weight ranging from 10:1 to 1:10, and components (A) and (B)+(C) being employed each at the rate of 5 to 30% by weight based on the total composition.

4,198,494

INTIMATE FIBER BLEND OF POLY(M-PHENYLENE ISOPHTHALAMIDE) AND POLY(P-PHENYLENE TEREPHTHALAMIDE)

William G. Burckel, deceased, late of Wilmington, Del. (by Velma B. Burckel, executrix), assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 30, 1974, Ser. No. 511,028
Int. Cl.[2] C08L 77/00
U.S. Cl. 525—432 **3 Claims**

1. An intimate blend of organic staple fiber components comprising at least about 15% by weight of a first fiber component consisting of poly(m-phenylene isophthalamide) fibers which in fabric form will meld or fuse within 10 seconds during exposure to a heat flux of 2 cal./cm.^{2}/sec. and from about 3–20% by weight of a second fiber component consisting of poly(p-phenylene terephthalamide) fibers which in fabric form exhibit a flame strength of at least 20 mg./den. for at least 10 seconds during exposure to a heat flux of 2 cal./cm.^{2}/sec.

4,198,495

CATIONIC AMINE-FUNCTIONAL COPOLYMERS AND AQUEOUS BATHS CONTAINING THE SAME

Kazys Sekmakas, Palantine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Mar. 15, 1979, Ser. No. 20,668
Int. Cl.[2] C08F 8/00, 220/58
U.S. Cl. 525—328 **11 Claims**

1. Cationic amine-functional copolymer which is a solution copolymer of monoethylenically unsaturated monomers consisting essentially of from 3% to 35% of monomer having a basic amino group, from 35% to 50% of isobutoxymethyl acrylamide or methacrylamide, from 0% to 15% of monomer providing active hydrogen atoms coreactive with N-methylol functionality, and the balance of the copolymer consisting essentially of nonreactive monomers, said proportions being based on the weight of the copolymer, and the amine groups in the copolymer being neutralized in an amount up to about 90% by a solubilizing acid to render said copolymer cationic and dispersible in water with the aid of a water miscible organic solvent.

4,198,496

PROCESS FOR POLYMERIZING BUTADIENE

Adel F. Halasa, Bath, and James E. Hall, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jan. 13, 1978, Ser. No. 869,334
Int. Cl.[2] C08F 4/70, 36/06
U.S. Cl. 526—115 **25 Claims**

11. The process for the hexane solution polymerization of a monomer composition containing at least 70 percent by weight of a conjugated diene comprising the steps of maintaining said monomer at a temperature of 32°–220° F. and in intimate contact with the catalyst composition comprising:

(a) a hexane-soluble cobalt component:

(b) a reducing agent having the formula $RAlX_2$ wherein R is a hydrocarbyl radical having 1–10 carbon atoms selected from the class consisting of alkyl, carbocyclic aryl and cycloalkyl radicals and X is halogen; and

(c) $MgCl_2$, $MgBr_2$, $MnCl_2$, $MnBr_2$ or a Mg or Mn salt of a carboxylic acid having 12–25 carbon atoms; the $RAlX_2$ component being present in a concentration to give an Al/Co ratio in the range of 10/1 to 1300/1; and the Mg or Mn component being present in a concentration to give a Mg/Co or Mn/Co ratio in the range of 0.25/1 to 5/1, said cobalt component being present in a concentration of 0.005–1.0 millimoles per 100 grams of monomer.

4,198,497

N-SUBSTITUTED ACRYLAMIDINES, COPOLYMERS OF N-SUBSTITUTED ACRYLAMIDINES AND ESTERS OF ACRYLIC AND METHACRYLIC ACID AND USES OF THE COPOLYMERS

Yannick Jolivet, Le Havre, and Christian Lachévre, Saint Mande, both of France, assignors to Compagnie Francaise de Raffinage, Paris, France

Division of Ser. No. 729,139, Oct. 4, 1976, Pat. No. 4,062,787. This application Sep. 9, 1977, Ser. No. 832,065
Claims priority, application France, Oct. 6, 1975, 75 30537
Int. Cl.[2] C08F 12/28, 20/52, 22/52, 220/68
U.S. Cl. 526—310 **3 Claims**

1. A copolymer of from 0.1 to 99.9% by weight of lauryl methacrylate and from 99.9 to 0.1% by weight of N,N'-diisopropyl acrylamidine.

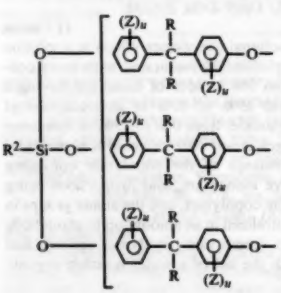
4,198,498

TRIS[POLY(ARYLOXYSILOXANE)] POLYMERS

Donald G. LeGrand, Burnt Hills, N.Y., and Gina G. Vitale, Arlington, Va., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 21, 1978, Ser. No. 962,613
Int. Cl.[2] C08G 77/26
U.S. Cl. 528—38 **9 Claims**

1. A tris[poly(aryloxysiloxane)] polymer represented by the general formula:



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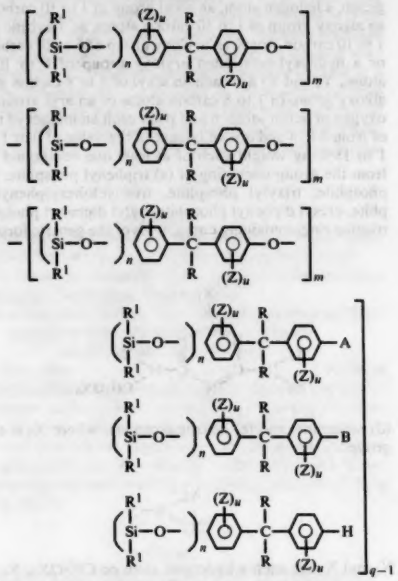

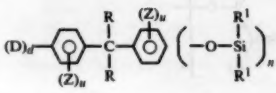

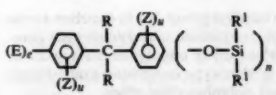

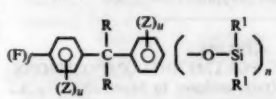

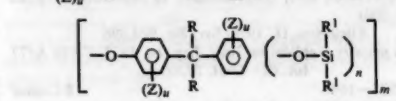

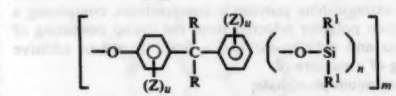

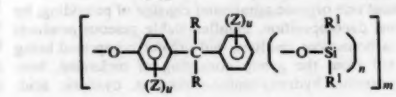

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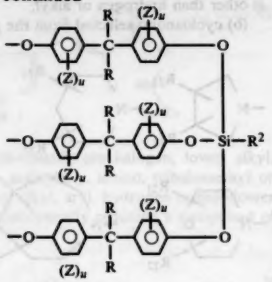
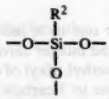


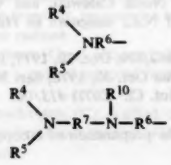
wherein u is an integer equal to from 1 to 4; m has a value from 0 to 10; n is equal to from about 5 to about 500, and preferably n has an average value from about 15 to about 90; q is at least 1, and preferably q is an integer equal to from about 2 to about 500; A, B and H are independently selected from OH and

radicals; D, E and F are OH; d, e and f are 0 or 1, provided that if q is equal to 1, then d, e and f are all 0, and further provided that if q is an integer greater than 1, then at least one of A, B and H is

radical and the sum of d+e+f is equal to an integer Y having a value of from 0 to 2 obtained from the formula 3-W=Y wherein W is the number of



radicals represented by A, B and H; R is a member selected from the class of hydrogen, monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals; R^1 is a member selected from the class of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals, and cyanoalkyl radicals, Z is a member selected from the class of hydrogen, lower alkyl radicals and halogen radicals; and R^2 is selected from the class of



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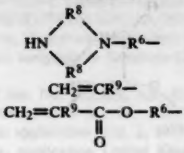


wherein R^4, R^3 and R^{10} are independently selected from hydrogen and alkyl radicals, preferably alkyl radicals containing from 1 to about 10 carbon atoms, R^6 and R^7 are alkylidene radicals, R^8 is a straight chain alkylidene radical containing from 2 to about 4 carbon atoms, and R^9 is a member selected from the class of hydrogen and methyl.

4,198,499

PROCESS FOR PRODUCING NEUTRALIZED PHENOL RESINS

Susumu Konii, Tokyo; Masatoshi Yoshida, Shimodate; Yukio Yoshimura, Saitama; Takehiko Ishibashi, and Shizuo Sakamoto, both of Shimodate, all of Japan, assignors to Hitachi Chemical Company, Inc., Japan

Filed Aug. 28, 1978, Ser. No. 937,116

Claims priority, application Japan, Aug. 29, 1977, 52-104033

Int. Cl.[2] C08G 2/28

U.S. Cl. 528—146 **11 Claims**

1. A process for producing a phenol resin which comprises reacting phenol with formaldehyde in the presence of an alkaline catalyst in a molar ratio of 3.5 to 6.0 moles of formaldehyde and 0.05 to 2.0 moles of the alkaline catalyst per mole of phenol at a temperature of 40° C. to 100° C. until a water miscibility degree of the reaction product becomes 0.3 to 2.0 ml/g, as measured at 30° C., neutralizing the reaction solution with an acid to pH 4.5 to 6.5, and precipitating the resulting product for separation.

4,198,500

TRANS-4,5-DIDEHYDRO-PGI$_1$ AMIDES

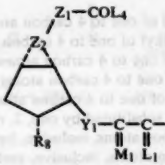
Donald E. Ayer, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 821,542, Aug. 3, 1977. This application Aug. 31, 1978, Ser. No. 938,545

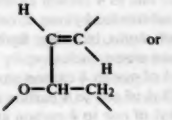
Int. Cl.[2] C07D 307/93

U.S. Cl. 542—426 **91 Claims**

1. A prostacyclin analog of the formula



wherein Y_1 is trans—CH=CH—, cis—CH=CH—, or —CH_2CH_2—;
wherein Z_2 is



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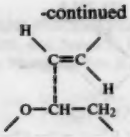
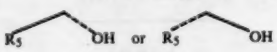
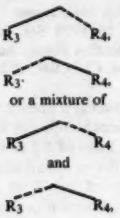


(2)

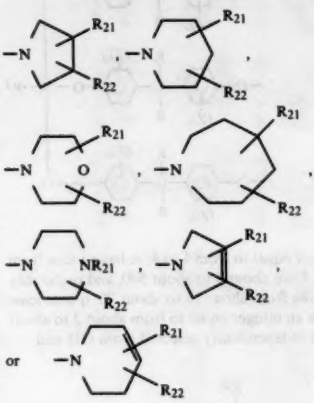
wherein Z_1 is
(1) $-(CH_2)_g-CH_2-CH_2-$, or
(2) $-(CH_2)_g-CH_2-CF_2-$,
wherein g is the integer zero, one, or 2;
wherein R_8 is hydrogen, hydroxy, or hydroxymethyl;
wherein M_1 is



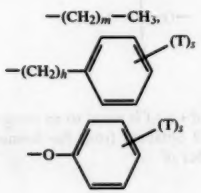
wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive;
wherein L_1 is



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein L_4 is
(a) amino of the formula $-NR_{21}R_{22}$; wherein R_{21} and R_{22} are
(i) hydrogen;
(ii) alkyl of one to 12 carbon atoms, inclusive;
(iii) cycloalkyl of 3 to 10 carbon atoms, inclusive;
(iv) aralkyl of 7 to 12 carbon atoms, inclusive;
(v) phenyl;
(vi) phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
(vii) carboxyalkyl of one to 4 carbon atoms, inclusive;
(viii) carbamoylalkyl of one to 4 carbon atoms, inclusive;
(ix) cyanoalkyl of one to 4 carbon atoms, inclusive;
(x) acetylalkyl of one to 4 carbon atoms, inclusive;
(xi) benzoylalkyl of one to 4 carbon atoms, inclusive;
(xii) benzoylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
(xiii) pyridyl;
(xiv) pyridyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive;
(xv) pyridylalkyl of one to 4 carbon atoms, inclusive;
(xvi) pyridylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, or alkoxy of one to 3 carbon atoms, inclusive;
(xvii) hydroxyalkyl of one to 4 carbon atoms, inclusive;
(xviii) dihydroxyalkyl of one to 4 carbon atoms; or
(xix) trihydroxyalkyl of one to 4 carbon atoms;
with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;
(b) cycloamino selected from the group consisting of



wherein R_{21} and R_{22} are as defined above;
(c) carbonylamino of the formula $-NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is as defined above;
(d) sulfonylamino of the formula $-NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined above; or
(e) hydrazino of the formula $-NR_{23}R_{24}$, wherein R_{23} is as defined above and R_{24} is amino of the formula $-NR_{21}R_{22}$, as defined above; and
wherein R_7 is



(1)
(2)
(3)

wherein m is the integer one to 5, inclusive, h is the integer zero to 3, inclusive; s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl.

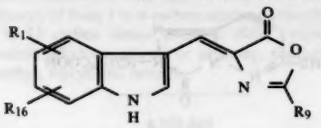
4,198,501

SYNTHESIS OF TRYPTOPHANS

Andrew D. Batcho, North Caldwell, and Willy Leimgruber, Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

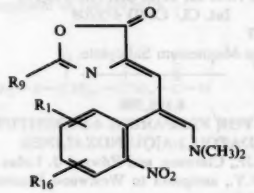
Division of Ser. No. 862,304, Dec. 20, 1977, Pat. No. 4,137,404. This application Oct. 30, 1978, Ser. No. 955,569
Int. Cl.[2] C07D *413/06*
U.S. Cl. 542—443 **9 Claims**

1. A process for the preparation of a compound of the formula:



VI

wherein R_1 and R_{16} individually are halogen, lower alkyl, hydroxy, lower alkoxy, aralkyloxy, amino, trihalomethyl or hydrogen and R_9 is lower alkyl, aryl, hydrogen or halo-lower alkyl, which comprises catalytically reducing a compound of the formula:



V

wherein R_1, R_9 and R_{16} are described above, with a catalyst selected from the group consisting of oxides of chromium, molybdenum, tungsten, platinum, palladium, rhodium, cobalt, nickel and ruthenium, in the presence of a solvent.

4,198,502

AMINOPYRROLE DERIVATIVES

Giorgio Tarzia, Rome, and Gianbattista Panzone, Milan, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

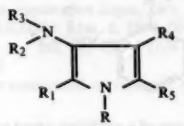
Division of Ser. No. 750,759, Dec. 15, 1976, Pat. No. 4,104,969, which is a continuation-in-part of Ser. No. 716,749, Aug. 23, 1976, abandoned, which is a continuation of Ser. No. 492,564, Jul. 28, 1974, abandoned. This application Nov. 13, 1978, Ser. No. 960,384

Claims priority, application United Kingdom, Aug. 29, 1973, 39790/73

Int. Cl.[2] C07D *207/14*

U.S. Cl. 542—414 **7 Claims**

1. A compound of the formula



I

wherein:

R is selected from hydrogen, (C_{1-4}) alkyl, benzyl and chlorobenzyl;

R_1 selected from hydrogen, (C_{1-4}) alkyl, phenyl and phenyl substituted by a radical selected from methyl, ethyl, methoxy, ethoxy, benzyloxy, fluoro, chloro and bromo;

R_2 and R_3 taken together, represent a benzylidene or a chlorobenzylidene radical;

R_4 is selected from (C_{2-4}) alkanoyl; benzoyl, and benzoyl substituted by a radical selected from chloro, methoxy or ethoxy;

R_5 represents hydrogen, (C_{1-4}) alkyl, carbethoxymethyl, or trifluoromethyl or a salt thereof with a pharmaceutically-acceptable acid.

4,198,503

3-CARBAMOYL SUBSTITUTED-7-UREIDO SUBSTITUTED CEPHALOSPORINS

Norman H. Rogers, Rudgwick, and Robert Stevenson, Dorking, both of England, assignors to Beecham Group Limited, Great Britain

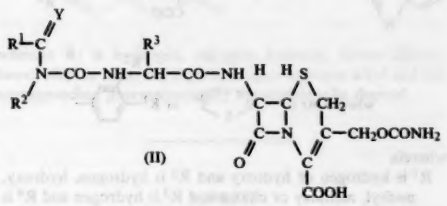
Continuation of Ser. No. 792,129, Apr. 29, 1977, abandoned, which is a continuation of Ser. No. 621,359, Oct. 10, 1975, abandoned. This application Aug. 2, 1978, Ser. No. 930,217

Claims priority, application United Kingdom, Nov. 5, 1974, 49423/74

Int. Cl.[2] C07D *501/32, 501/34*

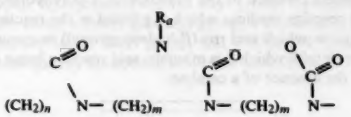
U.S. Cl. 544—22 **13 Claims**

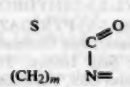
1. A 3-carbamoyloxymethyl-7-α-acylureido cephalosporin of formula (II) or a pharmaceutically acceptable salt or acid addition salt or in vivo hydrolyzable ester thereof:



(II)

wherein Y is oxygen or sulphur, R^1 is methyl, ethyl, n- or isopropyl, n-, sec, or tert-butyl, n-pentyl, n-hexyl, n-heptyl, ω-methylheptyl, n-octyl, ω,ω-dimethyloctyl, prop-2-enyl, 3-methylprop-2-enyl, 1-methylprop-2-enyl, but-2-enyl-, oct-2-enyl, 2-phenylethyl, 2-phenylethenyl, 2-(2[1]-methoxyphenyl-)ethenyl, 2-(4[1]-nitrophenyl)ethenyl, 2-(3[1], 4[1], 5[1]-trimethoxyphenyl)ethenyl, 2-(fur-2[1]-yl)enyl, 3-phenylpropyl, 1-methyl-2-phenylethenyl, 4-phenylbut-2-enyl, 5-phenyl-pent-2-enyl, methoxy, ethoxy, n- or sec-propoxy, n-, sec or tert-butoxy, n-pentoxy, n-hexyloxy, cyclohexyloxy, methylamino, dimethylamino, phenyl, 2-methoxyphenyl, 2-chlorophenyl, 2-methoxyphenyl, 3,4,5-trimethoxyphenyl, 4-nitrophenyl, 2-methoxyphenyl, 4-methylphenyl, methoxymethyl, ethoxymethyl, methylthiomethyl, phenoxymethyl; R^2 is alkyl having from 1 to 3 carbon atoms, or benzyl; or R^1 and R^2 together with the carbon and nitrogen atoms to which they are attached form one of the following ring systems:





in which n is an integer from 3 to 5 and m is an integer from 2 to 4 and R_a is hydrogen, C_{1-3} alkyl, C_{1-3} acyl or C_{1-3} alkylsulphonyl; R^3 is phenyl, 4-hydroxyphenyl, 3-chloro-4-hydroxyphenyl, 4-nitrophenyl, 4-aminophenyl, 2-thienyl, 3-thienyl, cyclopropyl, cyclohexyl, cyclohexa-1,4-dienyl, iso-propyl or methyl.

4,198,504

[3-(PYRIDINIUM)-7-(NAPHTHYIRIDINYL CARBONYLAMINO)ACETAMIDO]CEPHALOSPORANIC ACID DERIVATIVES

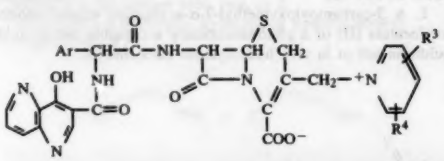
Takayuki Naito, Kawasaki; Jun Okumura, and Masahisa Oka, both of Yokohama, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

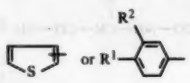
Filed Nov. 2, 1978, Ser. No. 957,113

Int. Cl.[2] C07D *501/46*

U.S. Cl. 544—25 **62 Claims**

1. A compound having the D configuration in the 7-side-chain and the formula



wherein Ar is 

wherein

R^1 is hydrogen or hydroxy and R^2 is hydrogen, hydroxy, methyl, methoxy or chloro and R^3 is hydrogen and R^4 is carboxyl, carboxymethyl, $—SO_3H$, $—CH_2CH_2COOH$, $—CH=CHCOOH$, $—CH_2CH_2SO_3H$, $—SCH_2COOH$ or R^3 and R^4 are each carboxyl substituted at the 2,3-, 2,4-, 2,5-, 2,6-, 3,4- or 3,5-positions or an alkali metal salt thereof.

4,198,505

PREPARATION OF TRIS-(β-HYDROXYPROPYL) ISOCYANURATE

Kurt C. Frisch, Detroit, Mich.; Daniël M. J. Tummers, and Anne Te Nijenhuis, both of Geleen, Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Jan. 18, 1979, Ser. No. 4,476

Claims priority, application Netherlands, Jan. 23, 1978, 7800770

Int. Cl.[2] C07D *251/34*

U.S. Cl. 544—221 **8 Claims**

1. In a process for a preparation of tris-(β-hydroxypropyl) isocyanurate by the reaction of propylene oxide and cyanuric acid at a temperature within the range of between 100° and 150° C., the improvement wherein said reaction is carried out at elevated pressure in the presence of a polyhydroxy compound reaction medium which is a liquid at the reaction temperature, in which said tris-(β-hydroxypropyl) isocyanurate is soluble or with which it is miscible, said reaction being carried out in the absence of a catalyst.

4,198,506

2-CARBOXYALKYL-2,3-DIHYDRO-6-MERCAPTO-S-TRIAZOLO[4,3-b]-PYRIDAZIN-3-ONES

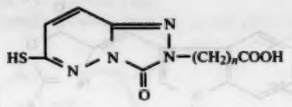
Takayuki Naito, Kawasaki; Jun Okumura, Yokohama; Hajime Kamachi, Ichikawa; Seiji Iimura, Tokyo; Hideaki Hoshi, Ichikawa, and Masahisa Oka, Yokohama, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 877,132, Feb. 13, 1978, Pat. No. 4,151,352, which is a division of Ser. No. 784,885, Apr. 5, 1977, Pat. No. 4,082,912, which is a continuation-in-part of Ser. No. 701,443, Jun. 30, 1976, abandoned. This application Mar. 21, 1979, Ser. No. 22,408

Int. Cl.[2] C07D *487/04*

U.S. Cl. 544—236 **3 Claims**

1. A compound having the formula



wherein n is one or two.

4,198,507

THEOPHYLLINE MAGNESIUM SALICYLATE

Richard Barry, Bloomfield, and Howard Rubin, Rockaway, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 13, 1978, Ser. No. 960,191

Int. Cl.[2] C07D *473/08*

U.S. Cl. 544—267 **1 Claim**

1. Theophylline Magnesium Salicylate.

4,198,508

PROCESS FOR PREPARING 4-SUBSTITUTED IMIDAZO[1,2-A]QUINOXALINES

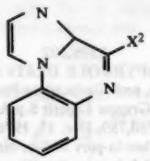
Paul L. Warner, Jr., Clarence, and Edward J. Luber, Jr., Buffalo, both of N.Y., assignors to Westwood Pharmaceuticals Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 757,640, Jan. 7, 1977, abandoned. This application Dec. 8, 1977, Ser. No. 858,454

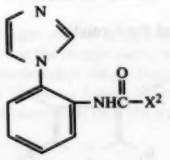
Int. Cl.[2] C07D *487/04, 233/60*

U.S. Cl. 544—346 **24 Claims**

1. A process for preparing 4-substituted imidazo [1,2-a]quinoxalines of the formula:



which comprises reacting, at a temperature of from about 95° C. to 195° C., a 1-(2-acyl aminophenyl)imidazole of the formula:



with a cyclizing amount of a cyclizing agent selected from the group consisting of phosphorus oxychloride and polyphosphoric acid to produce said 4-substituted imidazo [1,2-a]quinoxaline in which $—X^2$ is $—R^5$ or $—NHR^2$ wherein:

(1) R^5 is hydrogen or a straight chain or branched hydrocarbon aliphatic group of from 1 to 18 carbon atoms; cycloalkyl of from 3 to 8 carbon atoms or cyclo alkenyl of 5–6 carbon atoms; phenyl; mono- or di-substituted phenyl which is substituted by alkyl of from 1 to 6 carbon atoms, alkoxyl of from 1 to 6 carbon atoms, halogen, trifluoromethyl, phenoxy, alkylthio, nitro, cyano or phenyl; naphthyl; phenoxymethyl; benzyl; or styryl; and

(2) R^2 is a radical bonded to the nitrogen by a carbon to nitrogen linkage and selected from the group consisting of aliphatic of from 1 to 17 carbon atoms; cycloaliphatic of from 3 to 8 carbon atoms; phenyl; mono- or di-substituted

phenyl substituted with alkyl of from 1 to 6 carbon atoms, alkoxyl, of from 1 to 6 carbon atoms, alkanoyloxy of from 1 to 18 carbon atoms, halogen, nitro, cyano, trifluoromethyl, alkylthio, phenyl or phenoxy; napthyl; phenoxymethyl; styryl; and benzyl.

4,198,509

MERCAPTOACYLPIPERAZINE CARBOXYLIC ACID COMPOUNDS

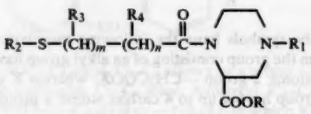
Kathryn A. Losee, and Jack Bernstein, both of New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 30, 1978, Ser. No. 955,854

Int. Cl.[2] C07D *241/06;* A61K *31/495;* C07D *241/18*

U.S. Cl. 544—388 **7 Claims**

1. A compound of the formula

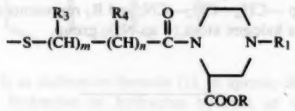


wherein

R, R_3 and R_4 each is hydrogen or lower alkyl;

R_1 is lower alkyl;

R_2 is hydrogen, lower alkanoyl, benzoyl or



m is 0, 1 or 2;

n is 1, 2 or 3, the sum of m+n being equal to 1, 2 or 3; and salts thereof.

4,198,510

PIPERIDENYLMETHYLIDENE PHOSPHONYLAMIDINES

Takayuki Shioiri, No. 18-14, 3-chome, Tsurumai, Showa-ku, Nagoya City, Aichi prefecture, Japan; Nobutaka Kawai, Tokyo, and Masatoshi Ban, Gifu, both of Japan, assignors to Sanwa Kagaku Kenkyusho Co., Ltd., Nagoya and Takayuki Shioiri, Aichi, both of, Japan

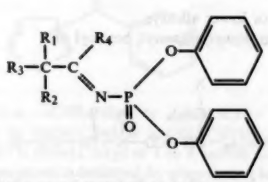
Filed Jul. 7, 1978, Ser. No. 922,524

Claims priority, application Japan, Oct. 17, 1977, 52-123594; Mar. 1, 1978, 53-023207; Mar. 1, 1978, 53-023208

Int. Cl.[2] C07F *9/24*

U.S. Cl. 546—22 **1 Claim**

1. An amidine compound represented by the formula



(V)

wherein R_1 represents hydrogen or lower alkyl, R_2 represents hydrogen, lower alkyl or allyl, R_2 represents phenyl, lower alkyl substituted phenyl, lower alkoxy substituted phenyl, cyclohexenyl substituted phenyl, benzoyl substituted phenyl, methoxy substituted naphthyl, dibenzofuranyl, or halogen substituted biphenyl and R_4 represents 1-piperidyl.

4,198,511

1,5-DIHYDRO-1,5-DIOXO-N-1H-TETRAZOL-5-YL-4H-[1]BENZOPYRANO[3,4-B]PYRIDINE-3-CARBOXAMIDES AND PROCESS THEREOF

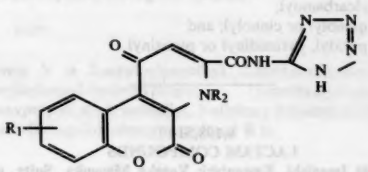
David T. Connor, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 21, 1979, Ser. No. 22,390

Int. Cl.[2] C07D *491/04*

U.S. Cl. 546—92 **4 Claims**

1. A compound of the formula:



I

wherein R_1 is hydrogen, halogen, hydroxy, lower alkoxy, lower alkyl or nitro and R_2 is hydrogen or lower alkyl and the corresponding pharmaceutically acceptable salts thereof.

4,198,512

1-OXO-1,2-DIHYDROISOQUINOLINE DERIVATIVES

Kazuo Kubo, Urawa; Noriki Ito, Iwatsuki; Isao Souzu, Urawa; Yasuo Isomura, Yokohama, and Hiroshige Homma, Omiya, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

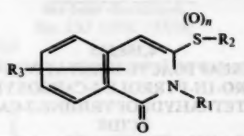
Filed Jul. 17, 1978, Ser. No. 925,217

Claims priority, application Japan, Jul. 22, 1977, 52/88064

Int. Cl.[2] C07D *217/24;* A61K *31/47*

U.S. Cl. 546—142 **9 Claims**

1. 1-Oxo-1,2-dihydroisoquinoline compounds of the formula



wherein R_1 represents a lower alkyl group or a pheny lower alkyl group; R_2 represents a lower alkyl group; R_3 represents a hydrogen atom, a lower alkanoyl group, a lower alkyl group or a hydroxy lower alkyl group; and n is 0, 1 or 2 and the pharmacologically acceptable non-toxic salts thereof.

4,198,513

1,2,4-TRIAZOLES

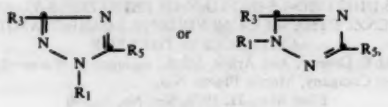
John J. Baldwin, Lansdale, and Frederick C. Novello, Berwyn, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 740,290, Nov. 9, 1976, Pat. No. 4,102,889, which is a continuation of Ser. No. 543,563, Jan. 23, 1975, abandoned, which is a division of Ser. No. 392,842, Aug. 29, 1973, Pat. No. 3,879,404, which is a division of Ser. No. 269,685, Jul. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 75,785, Sep. 25, 1970, abandoned. This application Apr. 7, 1978, Ser. No. 894,450

Int. Cl.[2] A61K *31/47;* C07D *401/14*

U.S. Cl. 546—167 **4 Claims**

1. A compound of the formula:



and the amine oxides and non-toxic salts thereof, wherein

R_1 is hydrogen, lower alkyl, lower alkanoyl, benzyl, menaphthyl, carbamoyl, lower alkylcarbamoyl or di- lower alkylcarbamoyl;

R_3 is quinolyl or cinnolyl; and

R_5 is pyridyl, pyrimidinyl or pyrazinyl.

4,198,514

LACTAM COMPOUNDS

Masayuki Imanishi, Kawanishi; Yutaka Masuoka, Suita, and Ryoko Nakajima, Kobe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

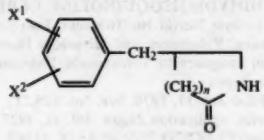
Filed Oct. 11, 1978, Ser. No. 950,524

Claims priority, application Japan, Oct. 11, 1977, 52/122249; Jul. 17, 1978, 53/87533

Int. Cl.[2] C07D *207/20, 213/26*

U.S. Cl. 546—216 **12 Claims**

1. A compound of the formula:



wherein X^1 is a halogen atom, X^2 is a halogen atom or hydrogen atom, and n is 1 or 2.

4,198,515

MERCAPTOACYL DERIVATIVES OF 4,5-DIHYDRO-1H-PYRROLE-2-CARBOXYLIC ACIDS AND 1,4,5,6-TETRAHYDROPYRIDINE-2-CARBOXYLIC ACIDS

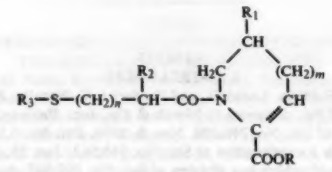
Miguel A. Ondetti, Princeton, and Michael E. Condon, Lawrenceville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 8, 1978, Ser. No. 967,827

Int. Cl.[2] C07D *213/55, 207/16*

U.S. Cl. 546—326 **8 Claims**

1. A compound of the formula



wherein

R and R_2 each is hydrogen or lower alkyl;

R_1 is hydrogen, hydroxy, halogen or lower alkoxy;

R_3 is hydrogen

m and n each is 0 or 1;

and physiologically acceptable salts thereof.

4,198,516

ISATIN-DERIVED DISPERSED DYES

Fabrizio Merlo, Saronno, and Giorgio Bornengo, Novara, both of Italy, assignors to Montedison S.p.A., Milan, Italy

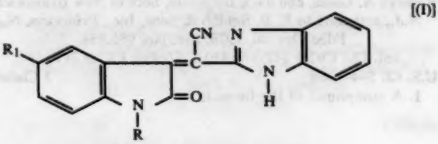
Filed Jan. 29, 1979, Ser. No. 7,582

Claims priority, application Italy, Feb. 2, 1978, 19897 A/78

Int. Cl.[2] C07D *403/06*

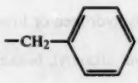
U.S. Cl. 548—327 **2 Claims**

1. A disperse dye derived from isatin, having the formula;



[(I)]

wherein the symbols have the following meanings: R is selected from the group consisting of an alkyl group having up to 5 carbon atoms; a group $—CH_2COOX$, wherein X stands for an alkyl group having up to 4 carbon atoms; a group



and a group $—CH_2—CH_2—CN$; and R_1 represents an atom of hydrogen, a halogen atom or an NO_2 group.

4,198,517

HISTIDINE DERIVATIVES

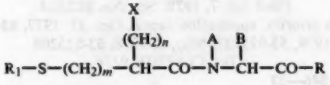
Miguel A. Ondetti, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 879,408, Feb. 21, 1978, Pat. No. 4,154,736, which is a division of Ser. No. 747,282, Dec. 3, 1976, Pat. No. 4,091,024. This application Dec. 26, 1978, Ser. No. 973,199

Int. Cl.[2] C07D *233/64*

U.S. Cl. 548—344 **7 Claims**

1. A compound of the formula

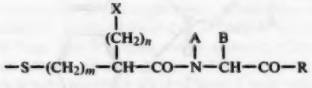


and basic salts thereof,

wherein

R is hydroxy or lower alkoxy;

R_1 is hydrogen, lower alkanoyl, benzoyl or



A is hydrogen, lower alkyl or hydroxy-lower alkylene;

B is imidazolyl-lower alkylene;

X is carboxy, lower alkoxycarbonyl, cyano, carbamoyl, N-substituted carbamoyl wherein the N-substitutent is lower alkyl or phenyl-lower alkylene;

m is 0 or 1; and

n is 0, 1, 2, 3 or 4.

4,198,518

PROCESS FOR THE PRODUCTION OF 3-SUBSTITUTED PYRAZOLANTHRONES

Athanassios Tzikas, Pratteln, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

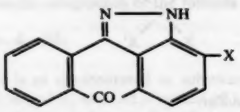
Filed Aug. 25, 1978, Ser. No. 937,023

Claims priority, application Switzerland, Sep. 2, 1977, 10735/77; Jan. 24, 1978, 737/78

Int. Cl.[2] C07D *231/54*

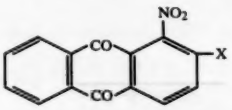
U.S. Cl. 548—357 2 Claims

1. A process for the production of 3-substituted pyrazolanthrone of the formula



(1),

wherein X is C_1–C_6 alkyl, C_1–C_6 alkoxy or a group —COR, in which R is hydrogen, C_1–C_4 alkyl, hydroxyl, C_1–C_6 alkoxy, —NH_2, —NH—C_1–C_6 alkyl or —NR_1R_2, in which R_1 and R_2, each independently of the other, are C_1–C_6 alkyl, which comprises reacting 1-nitroanthraquinone of the formula



(2),

wherein X is as defined in formula (1), in aprotic dipolar solvent, with hydrazine or hydrazine hydrate, at normal or slightly elevated temperature, to give 3-substituted pyrazolanthrone of the formula (1).

4,198,519

ANTI-INFLAMMATORY COMPOUNDS

Alexander C. Goudie, Harlow, England, assignor to Beecham Group Limited, Great Britain

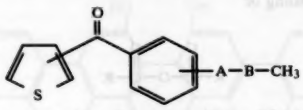
Continuation of Ser. No. 815,645, Jul. 14, 1977, abandoned. This application Oct. 18, 1978, Ser. No. 952,390

Claims priority, application United Kingdom, Jul. 30, 1976, 31852/76

Int. Cl.[2] C07D *333/24, 333/16;* A61K *31/39*

U.S. Cl. 549—70 20 Claims

1. A compound of the formula:



wherein A is —CHRCH$_2$— or —CR=CH— in which R is hydrogen or methyl and B is CO, CHOH or CHOCOR[1] wherein R[1] is phenyl, alkyl of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms substituted by phenyl, or phenyl, alkyl of 1 to 4 carbon atoms, or alkyl of 1 to 4 carbon atoms substituted by phenyl, said phenyl, alkyl or phenyl substituted alkyl being substituted by a member selected from the group consisting of hydroxyl, acetoxyl, methoxyl, acetamido, amino or a nontoxic salt thereof, alkylamino of 1 to 4 carbon atoms in the alky moiety, dialkylamino of 1 to 4 carbon atoms in each alkyl moiety and carboxyl.

4,198,520

NONIONIC MONOMERIC EMULSION STABILIZERS

Carlos M. Samour, Wellesley, and Mildred C. Richards, Wakefield, both of Mass., assignors to The Kendall Company, Boston, Mass.

Continuation of Ser. No. 643,435, Dec. 22, 1975, abandoned, which is a division of Ser. No. 265,244, Jun. 22, 1972, Pat. No. 3,960,935. This application Oct. 21, 1977, Ser. No. 844,288

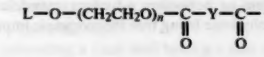
Int. Cl.[2] C07C *69/80*

U.S. Cl. 560—83 1 Claim

1. A compound having the formula

ROV

wherein V is 2-acryloyloxyethyl, 2-methacryloyloxyethyl, 3-acryloyloxy-2-hydroxypropyl, 3-methacryloyloxy-2-hydroxypropyl, allyl, methallyl, 3-allyloxy-2-hydroxypropyl or 3-methallyloxy-2-hydroxypropyl and R is



wherein Y is O-phenylene or O-phenylene in which one or more of the hydrogen atoms is replaced by a lower alkyl group or by a halogen atom; n is an integer from 9 to 50; L is C_8 to C_{28} aliphatic hydrocarbon linked to the oxygen directly or covalently thereto through a phenylene linkage.

4,198,521

15-DEOXY-16-HYDROXY-16-VINYL AND CYCLOPROPYL SUBSTITUTED PROSTANOIC ACIDS AND CONGENERS

Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; Charles V. Grudzinskas, Nyack, N.Y., and Sow-Mei L. Chen, Park Ridge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

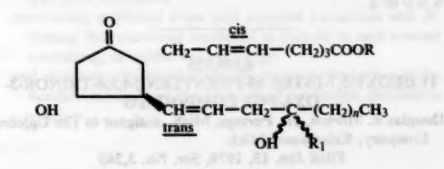
Continuation-in-part of Ser. No. 706,343, Jul. 19, 1976, Pat. No. 4,061,670. This application Dec. 5, 1977, Ser. No. 857,715

The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.

Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—118 11 Claims

1. An optically active compound of the formula



or a racemic mixture of that formula and the mirror image thereof wherein R is selected from the group consisting of hydrogen, methy and ethyl, R_1 is selected from the group consisting of vinyl and cyclopropyl and n is from 3 to 5, and the pharmacologically acceptable cationic salts thereof when R_1 is hydrogen.

4,198,522

4-(MONOALKYLAMINO)PHENYL CARBINOLS AND ESTER DERIVATIVES

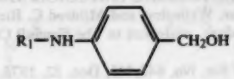
Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 27, 1977, Ser. No. 836,948

Int. Cl.[2] C07C *91/40, 93/26*

U.S. Cl. 560—250 9 Claims

1. p-Normal-alkyl (C_8–C_{19}) aminobenzyl alcohols of the formula:



wherein R_1 is a straight chain alkyl group having 8–19 carbon atoms.

4,198,523

SALT OF P-HYDROXYMANDELATE

Robert J. Copeland, and Philip N. Edwards, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 22, 1978, Ser. No. 908,465
Int. Cl.² C07C *65/135*
U.S. Cl. 562—470 **3 Claims**

1. Solid purified sodium or potassium p-hydroxymandelate monohydrate, said monohydrate being free from organic impurities.

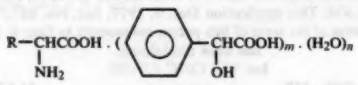
4,198,524

OPTICALLY ACTIVE AMINO ACID-MANDELIC ACID COMPLEXES

Yasuhisa Tashiro, Yokohama; Takashi Nagashima, Saitama; Shigeru Aoki, and Rinzo Nishizawa, both of Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1978, Ser. No. 886,745
Claims priority, application Japan, Mar. 24, 1977, 52-31555
Int. Cl.² C07C *65/135*
U.S. Cl. 562—470 **13 Claims**

1. An optically active amino acidmandelic acid complex of the formula



wherein R is methyl, ethyl or methylthioethyl, m is 1 or 2, and n is 0 or $\frac{1}{2}$.

4,198,525

11-DEOXY-3,7-INTER-M-PHENYLENE-4,5,6-TRINOR-3-OXA-PGE COMPOUNDS

Douglas R. Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 15, 1979, Ser. No. 3,243
Int. Cl.² C07C *177/00*
U.S. Cl. 562—471 **4 Claims**

1. 3,7-Inter-m-phenylene-4,5,6-trinor-3-oxa-11-deoxy-PGE_1.

4,198,526

PROCESS FOR THE MANUFACTURE OF P-HYDROXYPHENYL ACETIC ACID

Philip N. Edwards, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 22, 1978, Ser. No. 908,466
Int. Cl.² C07C *65/02*
U.S. Cl. 562—478 **3 Claims**

1. A process for the manufacture of p-hydroxyphenylacetic acid which comprises reducing p-hydroxymandelic acid by heating the p-hydroxymandelic acid in aqueous acidic solution in the presence of a chromous salt and then recovering the resulting p-hydroxyphenylacetic acid.

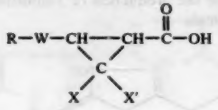
4,198,527

ETHER SUBSTITUTED CYCLOPROPANECARBOXYLIC ACIDS AND ESTERS

Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Sep. 15, 1978, Ser. No. 942,509
Int. Cl.² C07C *61/04, 69/74*
U.S. Cl. 562—506 **11 Claims**

1. A compound of the formula:



wherein,

W is oxygen or sulfur;

X is lower alkyl or halogen;

X′ is hydrogen, lower alkyl or halogen;

R is lower haloalkyl, lower alkenyl, or lower haloalkenyl;

and the inorganic salts thereof and lower alkyl esters thereof.

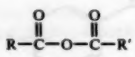
4,198,528

PREPARATION OF DI-TERTIARY PEROXIDES

Donald R. Kelsey, Piscataway, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 25, 1978, Ser. No. 872,179
Int. Cl.² C07C *179/06*
U.S. Cl. 568—578 **12 Claims**

1. In the method for the preparation of di-tertiary peroxides by the interaction of a tertiary aryl or alkyl hydroperoxide with a tertiary aryl or alkyl alcohol in the presence of a strong acid catalyst, the improvement which comprises carrying out said interaction in the presence of at least one readily hydrolyzable anhydride of carboxylic acids having a $pK_a > 2.85$ in a molar ratio of hydroperoxide:alcohol:anhydride of about 1.0:0.2–2.5:0.2–2.0 at a temperature of about −10° C. to about 120° C., said anhydride having a formula selected from the group consisting of



wherein each of R and R′ is selected from the group consisting of alkyl groups having 1 to 4 carbons or aryls containing at least one electronegative substituent and 6 to 10 carbons, and

wherein Z is a divalent radical selected from the group consisting of alkylene radicals having 2 to 10 carbons, cycloalkylene radicals having 5 to 6 carbons or o-phenylene.

4,198,529

PROCESS FOR THE PRODUCTION OF ALKOXY-SUBSTITUTED POLYCYCLIC AROMATIC COMPOUNDS

Maurice Grêlat, Bettingen, and Claus D. Weis, Pfeffingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,573

Claims priority, application Switzerland, Jan. 11, 1978, 278785/78

Int. Cl.[2] C07C *5/327, 5/09*

U.S. Cl. 568—633 5 Claims

1. A process for the production of alkoxy-substituted polycyclic aromatic compounds of the formula

$$R_1O—R—OR_1$$

wherein R is an unsubstituted or substituted polycyclic aromatic radical and R_1 is an alkyl radical of 1 to 4 carbon atoms, which comprises reacting a polycyclic aromatic compound of the formula

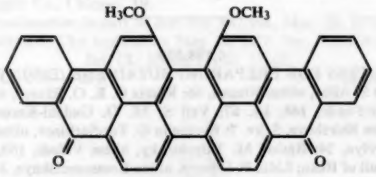
$$HO—R—OH$$

wherein R is as defined above, with a dialkyl alkanephosphonate of the formula

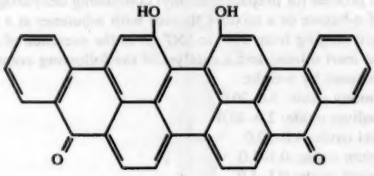
$$R_1—\overset{\overset{O}{\|}}{P}—(OR_1)_2$$

wherein R_1 is as defined above.

2. A process according to claim 1 for the production of the compound of the formula



by reaction of the compound of the formula



with dimethyl methanephosphonate of the formula

$$CH_3—\overset{\overset{O}{\|}}{P}—(OCH_3)_2$$

4,198,530

PRODUCTION OF TERTIARY BUTYL METHYL ETHER

W. Wayne Wentzheimer, Glen Mills, and Frank W. Melpolder, Wallingford, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 29, 1978, Ser. No. 912,622

Int. Cl.[2] C07C *41/06, 41/10, 41/12*

U.S. Cl. 568—697 2 Claims

1. In the method in which most of the isobutene content of a C_4 hydrocarbon stream containing significant amounts of normal butenes selectively reacts with methanol in the presence of an acidic ion exchange resin catalyst to form tertiary butyl methyl ether, in which tertiary butyl methyl ether is withdrawn as one of the products of the process, and in which a mixture of methanol and C_4 hydrocarbons is distilled at super atmospheric pressure to provide a residue comprising tertiary butyl methyl ether, the improvement which consists of:

controlling the concentration of the isobutene in the C_4 hydrocarbon stream to be more than 5% but less than 60% by weight of the C_4 hydrocarbon stream portion of the total feed;

providing a total feed having a unit mol ratio of methanol to isobutene which is within the range from 1.02 to 1.20, thereby significantly repressing formation of diisobutylene in the reactor;

directing a total feed mixture comprising methanol, isobutene and other C_4 hydrocarbons, said total feed having the required unit mol ratio of methanol to isobutene within the range from 1.02 to 1.20 through a reactor containing an acidic ion exchange catalyst at a temperature within the range from 90° to 170° F. at an hourly weight velocity within the range from about 2 to about 20 to prepare an effluent comprising tertiary butyl methyl ether, C_4 hydrocarbons, and excess methanol;

transferring the effluent from the reactor to an azeotropic distillation zone, and there distilling the C_4 hydrocarbons from the effluent at a pressure within the range from 12 atmospheres to 25 atmospheres, whereby substantially all of the methanol in said effluent is azeotropically removed together with the C_4 hydrocarbons and whereby substantially all of the methanol is removed from the tertiary butyl methyl ether;

washing the C_4 hydrocarbon distillate with an aqueous extractant to provide a cleaned up C_4 hydrocarbon stream free from methanol;

recovering methanol from said aqueous extractant and directing the recovered methanol as recycle to said reactor containing an acidic ion exchange;

and removing the purified tertiary butyl methyl ether as the bottom stream from the pressurized azeotropic distillation zone.

4,198,531

MANUFACTURE OF P-ALKYLPHENOLS

Franz Merger, Frankenthal; Max Strohmeyer, Limburgerhof; Gerhard Sandrock, Frankenthal; Heinz Hohenschutz, Mannheim; Ludwig Schroff, and Gerhard Nestler, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

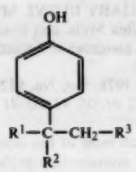
Continuation of Ser. No. 695,427, Jun. 14, 1976, Pat. No. 4,068,275. This application Oct. 14, 1977, Ser. No. 842,304

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1975, 2526644

Int. Cl.[2] C07C *39/06*

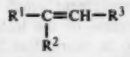
U.S. Cl. 568—793 13 Claims

1. In a process for the continuous manufacture of p-alkylphenols of the formula



I

where R^1 is selected from the group consisting of alkyl of 1 to 9 carbon atoms, phenol and alkylphenol and R^2 and R^3 may be identical or different and each is hydrogen or alkyl of 1 to 9 carbon atoms, in which phenol and an olefin of the formula



II

where R^1, R^2 and R^3 have the above meanings are continuously added to a reaction mixture maintained in a reaction zone at a temperature of from about 70° to 140° C., said reaction zone containing a fixed bed of an organic sulfonic acid cation exchanger having a particle size of from 10 to 20 mesh, wherein the improvement comprises:

replacing said fixed bed catalyst with a catalyst which is suspended in the reaction mixture,

using an organic sulfonic acid cation exchanger which has a particle size of from 10 to 200 micrometers,

stirring said reaction mixture at a speed of from about 400 to 2,000 rpm, and

continuously withdrawing reaction product I from the reaction mixture while retaining the catalyst particles suspended within the reaction zone.

4,198,532

NOVEL ALCOHOL ODORANTS

Paul A. Ochsner, Geneva, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

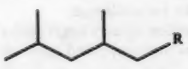
Filed Jul. 25, 1978, Ser. No. 927,809

Claims priority, application Luxembourg, Aug. 4, 1977, 77923; Switzerland, Jun. 15, 1978, 6537/78

Int. Cl.[2] C07C *31/02, 33/02*

U.S. Cl. 568—840 **4 Claims**

1. Alcohols of the general formula:



(I)

wherein R represents the 1-hydroxy-2-methyl-propyl or 3-hydroxy-butyl group.

4,198,533

(11Z,13Z)-11,13-HEXADECADIEN-1-OL AND DERIVATIVES

Robert L. Carney, and Clive A. Henrick, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Feb. 26, 1979, Ser. No. 15,277

Int. Cl.[2] C07C *33/02, 33/04;* C07F *7/18;* C07D *309/02*

U.S. Cl. 568—840 **3 Claims**

3. The compound, (11Z,13Z)-11,13-hexadecadien-1-ol.

4,198,534

COSMETIC BASE MATERIAL

Hiroshi Mandai, Chiba; Anri Tominaga, Tokyo; Yoshikazu Yoshimura, Ichikawa, and Hiroshi Isa, Yachiyo, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed May 12, 1978, Ser. No. 905,126

Claims priority, application Japan, May 19, 1977, 52-57086

Int. Cl.[2] C07C *9/14, 3/10*

U.S. Cl. 585—16 **1 Claim**

1. A cosmetic base material consisting of synthetic saturated aliphatic hydrocarbon having from 24 to 36 carbon atoms in the molecule, a methyl/methylene proton ratio of from 0.25/1 to 0.6/1 and a pour point of from −55° C. to 10° C., said synthetic saturated aliphatic hydrocarbon having been prepared by cationic polymerization of an aliphatic monoolefin having from 12 to 18 carbon atoms in the monoolefin molecule or mixture of said monoolefins, separating the dimer formed by said cationic polymerization from unreacted olefin and oligomers of higher degree of polymerization than the dimer, and then hydrogenating said dimer to obtain said cosmetic base material.

4,198,535

PROCESS FOR PRODUCING LINEAR UNSATURATED DIMERS OF α-ALKYL STYRENES

Kazunori Takahata, Ichihara, and Hiroshi Hasui, Tokyo, both of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Sep. 27, 1978, Ser. No. 946,301

Claims priority, application Japan, Sep. 27, 1977, 52/115086

Int. Cl.[2] C07C *15/14*

U.S. Cl. 585—406 **12 Claims**

1. A process for producing a linear unsaturated dimer of α-alkyl styrene which comprises heating at atmospheric pressure to 10 kg/cm^{2}g an α-alkyl styrene in contact with a silica-alumina catalyst, said catalyst consisting essentially of alumina and silica in a weight ratio of alumina to silica of from 83/17 to 96/4 and said catalyst being substantially free of alkali.

4,198,536

PROCESS FOR PREPARING BUTADIENE (DIVINYL)

Vagab S. Aliev, ulitsa Nizami, 66; Ramiz G. K. O. Rizaev, ulitsa Sharif-zade, 148, kv. 67; Veli S. M. O. Gadzhi-Kasumov, ulitsa Shirshova, 5, kv. 7; Beniamin G. Ter-Sarkisov, ulitsa 28 Aprelya, 14; Rashid M. Talyshinsky, ulitsa Vidadi, 160, kv. 16, all of Baku; Lidia P. Pilaeva, ulitsa Komsomolskaya, 3, kv. 23, Baku, poselok Razina, and Zhalya M. K. Seifullaeva, ulitsa Chapaeva, 2a, kv. 5, Baku, all of U.S.S.R.

Filed Dec. 28, 1978, Ser. No. 973,756

Int. Cl.[2] C07C *5/48, 11/16;* B01J *23/18*

U.S. Cl. 585—626 **6 Claims**

1. A process for preparing divinyl comprising dehydrogenation of n-butane or a mixture thereof with n-butenes at a temperature ranging from 550° to 650° C. in the presence of oxygen, an inert diluent and a catalyst of the following composition, percent by weight:

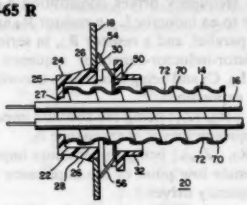
antimony oxide: 5.0–20.0
vanadium oxide: 2.0–10.0
nickel oxide: 4.0–20.0
thorium oxide: 0.1–1.0
titanium oxide: 0.1–1.0
carrier: the balance.

4,198,537

CONNECTOR

Remo Mariani, Toms River, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Aug. 21, 1978, Ser. No. 935,700
Int. Cl.[2] H02G 3/06
U.S. Cl. 174—65 R **19 Claims**



1. A connector for mechanically and electrically joining a flexible metallic raceway to an electrical enclosure comprising: a body member having means to engage one surface of the wall of an electrical enclosure about an opening in such wall through which a portion of said body member is adapted to be passed; said body member having a longitudinal passage extending therethrough and a transverse passage communicating therewith; plate means having an aperture therethrough communicating with said longitudinal passage of said body member; said plate means positioned in said transverse passage of said body member; engagement means coupled to said plate means for engaging the second surface of the wall of an electrical enclosure about the opening in the wall through which a portion of said body member is adapted to be passed to thereby secure the connector to said electrical enclosure wall, whereby said wall will be between said means to engage and said engagement means; and coupling means on said connector for coupling a flexible metallic raceway to said connector.

4,198,538

SUSPENSION INSULATOR

George E. Lusk, Woodstock, Ill., assignor to Josyln Mfg. and Supply Co., Chicago, Ill.

Continuation-in-part of Ser. No. 667,106, Mar. 15, 1976, abandoned. This application May 25, 1978, Ser. No. 909,679
Int. Cl.[2] H01B 17/02, 17/44
U.S. Cl. 174—140 S **22 Claims**

4. A suspension insulator comprising

an elongated electrically insulating rod for supporting a load in tension,

an end connector affixed to a longitudinal end of said rod, said end connector comprising means mechanically bonding said end connector to said rod, said bonding means comprising a resin compound having temperature dependent bonding properties, and a rigid retainer receiving and retaining said resin compound,

an end fitting affixed to said end connector, and

means spaced apart from said retainer and in contact with said end fitting for protecting said resin compound from being heated beyond predetermined desirable limits due to electrical current flow upon an external electrical flashover of said suspension insulator, said protecting means providing an electrical current path that substantially bypasses said retainer to thereby maintain an effective mechanical bond between said end connector and said rod during and subsequent to a flashover, said protecting means comprising an elongate cylinder disposed coextensive with said retainer over a substantial portion of said retainer.

13. A method of providing integral compensation for thermally induced volumetric changes of the components of a suspension insulator having an elongated electrically insulating rod, an end connector affixed to a longitudinal end of said rod, a plurality of axially aligned, elongated insulating shells mounted about and serially disposed along the longitudinal axis of said rod, each of said plurality of shells having a centrally disposed elongated bore, the method comprising the steps of:

filling substantially all of the spaces between the rod and the internal bores of the plurality of shells with a filling compound, and

disposing annularly shaped compensation discs fabricated from a closed cell compressible material between adjacent ones of said shells and said rod for compensating for thermally induced volumetric changes of said shells, said rod and said filling compound.

15. A suspension insulator comprising

an elongated electrically insulating rod for supporting a load in tension,

an end connector affixed to a longitudinal end of said rod,

a plurality of axially aligned, elongated, insulating shells mounted about and serially disposed along the longitudinal axis of said rod, each of said plurality of shells having a centrally disposed elongated bore,

means filling substantially all of the spaces between said rod and the internal bores of said plurality of shells, and

means disposed between adjacent ones of said shells and said rod for compensating for thermally induced volumetric changes of said shells, said rod and said filling means, said compensating means comprising annularly shaped compensation members fabricated from a closed cell compressible material.

4,198,539

SYSTEM FOR PRODUCING ELECTRIC FIELD WITH PREDETERMINED CHARACTERISTICS AND EDGE TERMINATIONS FOR RESISTANCE PLANES THEREFOR

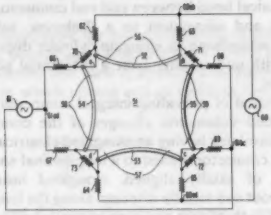
William Pepper, Jr., Bethesda, Md., assignor to Peptek, Inc., Bethesda, Md.

Continuation-in-part of Ser. No. 759,931, Jan. 19, 1977, abandoned. This application Jan. 5, 1978, Ser. No. 867,256
Int. Cl.[2] G08C 21/00
U.S. Cl. 178—18 **26 Claims**

1. In combination with means having a resistive surface, a system of producing an electric field having predetermined electrical energy distribution characteristics along a first direction and predetermined electrical energy distribution characteristics along a second direction, said second direction being transversely oriented with respect to said first direction comprising,

said resistive surface being provided with a first pair of opposed lateral edges and a second pair of opposed lateral edges, each of said laterally opposed edges having resistive electrode means therealong for distributively passing an electrical current into said resistive surface at incremental points of said opposed edges, respectively, and

including resistance means for adjusting the distribution of current into said incremental points of said opposed edges of said resistive surface to thereby control the current supplied to said incremental points of said surface at the lateral edges thereof so as to establish a current flow between opposed lateral edges, and each said resistive electrode having a substantially uniform resistance per unit length, and said resistive surface including resistive edge extensions at a plurality of sequential points there-



along, respectively, for limiting the current removed from said electrode at sequential points therealong, respectively,

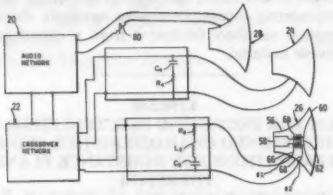
each said resistive electrode including a plurality of distributed conductor members along said laterally opposed edges, said distributed conductor members being carried by and in conductive contact with the surface of said resistive surface along the length of each distributed conductor member.

4,198,540

COMPENSATED CROSSOVER NETWORK

Fred R. Cizek, Cambridge, Mass., assignor to Cizek Audio Systems, Inc., Andover, Mass.

Continuation of Ser. No. 689,454, May 24, 1976, abandoned.
This application Mar. 15, 1978, Ser. No. 886,628
Int. Cl.[2] H04R *3/04*
U.S. Cl. 179—1 D **3 Claims**



1. In an audio system comprising an audio amplifier producing an audio output composite signal including at least a relatively low frequency component signal and at least a relatively high frequency component signal, a plurality of drivers including at least one relatively low frequency driver and at least one relatively high frequency driver, at least one crossover network for directing said relatively low frequency component signal to said relatively low frequency driver and said relatively high frequency component signal to said relatively high frequency driver:

(a) at least one compensation network connected across said low frequency driver, and at least another compensation network connected across said high frequency driver;

(b) said relatively low frequency driver being characterized by an absolute impedence vs. frequency response curve having a peak at relatively low frequencies, a trough thereafter and a rise at relatively high frequencies;

(c) said one compensation network converting the effective impedance of said low frequency driver to a resistance;

(d) said one compensation network including a resistor-inductor-capacitor series sequence across said low frequency driver;

(e) said low frequency driver constituting a circuit that is equivalent to an inductor L_1, a resistor R_1 and a capacitor C_1, all in parallel, and a resistor R_3, in series;

(f) said resistor-inductor-capacitor sequence being designated R_2, L_2, C_2 and being selected in accordance with the following expressions

$|Z_1|=R_1+R_3$, $|Z_1|$ being the absolute impedance of said low frequency driver at resonance f_1,

$|Z_{min}|=R_3$, $|Z_{min}|$ being the absolute impedance at the approximate low point of the impedance curve of said low frequency driver,

R_3=the approximate low point value of the magnitude of impedance above f_1 of said low frequency driver, said low point value being higher than that which would be measured below f_1,

R_1=the high point value of the magnitude of impedance of said low frequency driver at f_1 minus R_3,

$R_2=R_3(R_1+R_3)/R_1$,

$L_2=L_1R_2^2$, and

$C_2=C_1/R_2^2$;

(g) said high frequency driver having a measured low point impedance at the approximate minimum point between a resonant frequency peak and an inductive impedance rise of its characteristic curve;

(h) said other compensation network including a resistor-capacitor series sequence across said high frequency driver;

(i) said resistor-capacitor series sequence being designated R_4, C_4, and being selected in accordance with the following expressions

R_4=the magnitude of said measured low point impedance of said high frequency driver at said approximate minimum point between said resonant frequency peak and said inductive impedance rise of said characteristic curve, said low point impedance being greater than that which would be measured below the resonant frequency; and

$C_4=1/(2\pi R_4 f_3)$, where R_4 is as defined above and f_1 is the frequency at which the measured inductive impedance rise of said high frequency driver has reached a value greater than $|Z|=\sqrt{2}R_4$;

(j) said one compensation network and said low frequency driver thereby having a compensated impedance that is essentially resistive in the region of its fundamental resonance and having a damped fundamental resonance;

(k) said other compensation network and said high frequency driver thereby having a compensated impedance that is essentially resistive.

4,198,541

SIGNAL HOLDING CIRCUIT

Isao Fukushima, Fujisawa, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 7, 1978, Ser. No. 875,797
Claims priority, application Japan, Feb. 8, 1977, 52-12176
Int. Cl.[2] H03K *17/60*
U.S. Cl. 179—1 P **16 Claims**

1. A signal holding circuit comprising:

an audio signal input terminal;

an audio signal output terminal;

an emitter follower transistor for introducing an audio signal supplied to said input terminal to said output terminal;

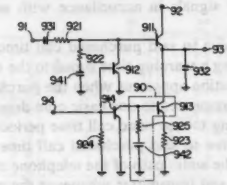
a constant current source transistor connected to an emitter of said emitter follower transistor for defining an emitter current thereof;

a control signal input terminal for receiving a control signal;

control circuit means connected between said control signal input terminal and the base of said emitter follower tran-

sistor and said constant current source transistor, and operative to substantially cut off said emitter follower transistor and substantially cut off said constant current source transistor when a control signal is applied to said control signal input terminal; and

a hold capacitor connected in parallel with said constant current source transistor, said audio signal being supplied



to said hold capacitor when said emitter follower transistor is conducting, said hold capacitor functioning to hold an output level at the emitter of said emitter follower transistor to a level at a moment immediately before the cut off of said emitter follower transistor in accordance with the supplied audio signal when said emitter follower transistor is cut off.

4,198,542

DEVICE FOR AIDING PERSONS HAVING A SPEECH HANDICAP

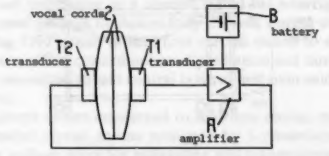
Georges Ducommun, St. Niklaus 91, 4532 Feldbrunnen, Switzerland

Filed May 8, 1978, Ser. No. 903,549

Claims priority, application Switzerland, May 13, 1977, 5987/77

Int. Cl.[2] A61N *1/36*

U.S. Cl. 179—1 AL **9 Claims**



1. A device for aiding persons having a speech handicap due to a dysfunctional phonation muscle, comprising:

first transducer means for picking up and transforming vibrations emitted by a functional phonation muscle of said person into an electrical signal;

circuit means coupled to said transducer means for producing an electrical correction signal representative of said electrical signal; and

second transducer means coupled to said circuit means for stimulating said dysfunctional phonation muscle thereby to correct the speech handicap.

4,198,543

STEREO COMPOSITE PROCESSOR FOR STEREO RADIO RECEIVER

Burtron D. Schertz, Kokomo; Wayne A. Smith, Russiaville, both of Ind., and Arthur R. Hammond, Boca Raton, Fla., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 19, 1979, Ser. No. 4,763

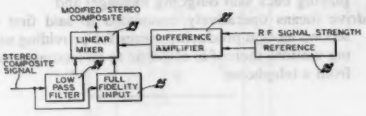
Int. Cl.[2] H04H *5/00*

U.S. Cl. 179—1 GM **2 Claims**

1. In a radio receiver having means effective to receive a radio frequency signal, to derive therefrom a stereo composite signal comprising a sum of channels signal having frequency components in the audio range and a difference of channels signals having frequency components in another frequency range above the audio range, and to decode the stereo composite signal into a first channel signal for application to a first audio channel and a second channel signal for application to a second audio channel, a stereo composite processor comprising, in combination:

low pass filter means having a high frequency roll-off attenuation characteristic within the audio range and a substantially flat attenuation across the other frequency range, the low pass filter being effective to filter the stereo composite signal and thus produce a high frequency roll-off attenuation in the sum of channels signal and a flat attenuation in the difference of channels signal;

linear mixer means effective to mix the stereo composite



signal and filtered stereo composite signal in controlled relative proportion in response to a control signal to produce a modified stereo composite signal;

means effective to apply the modified stereo composite signal to the decoding means; and

means effective to generate the control signal in response to a parameter indicative of noise in the stereo composite signal, the control signal varying in sense to decrease the attenuation in the modified stereo composite signal and thus decrease high frequency roll-off and difference of channels signal attenuation in the audio channels for low noise levels and to increase attenuation in the modified stereo composite signal and thus increase high frequency roll-off and difference of channels signal attenuation for high noise levels.

4,198,544

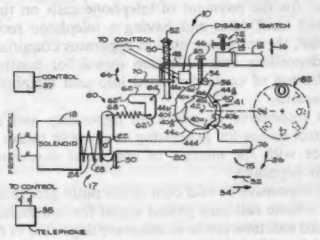
TAPE HEAD CONTROL ARRANGEMENT

Neal J. Buglewicz, Rolling Hills Estates, Calif., assignor to Phone-Mate, Inc., Torrance, Calif.

Filed Nov. 10, 1977, Ser. No. 850,419

Int. Cl.[2] H04M *1/64*; G11B *5/55, 21/08*

U.S. Cl. 179—6 R **19 Claims**



1. In a tape head control for an automatic telephone answering arrangement for indexing the tape head to predetermined tracks on a multi-track recirculating tape having a plurality of tracks thereon in which an outgoing message is prerecorded on the first track and each individual incoming message is sequentially recorded, one message on each other track, and having a record and playback mode, the improvement comprising, in combination:

first motion producing means operatively connected to the tape head for indexing motion to position the tape head at said first track of the multi-track tape in response to each

incoming call for the condition of playing back said outgoing message, and said tape head in the playback mode to play the outgoing prerecorded message to the incoming caller, and said first motion producing means free of operative connection to the tape head for conditions other than playing back said prerecorded message;

second motion producing means operatively connected to the tape head and free of operative interconnection to said first motion producing means, for indexing motion for sequentially indexing the tape head from the second track to each successive track in response to successive incoming calls in the record mode thereof to record an incoming message on the tape, and said second motion producing means including means for positioning said tape head at a predetermined track of said multitrack recirculating tape other than said first track thereof for conditions other than playing back said outgoing message; and

drive means operatively connected to said first and said second motion producing means for providing said indexing motions thereof in response to an incoming ring signal from a telephone.

4,198,545

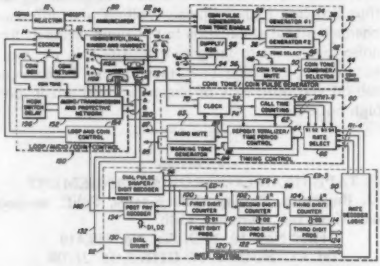
AUTOMATIC CALL TIMING TELEPHONE APPARATUS

Melval C. Haist, Sunrise, and Alan J. Lischin, Plantation, both of Fla., assignors to Communication Equipment and Engineering Company, Melrose Pk., Ill.

Filed Mar. 8, 1978, Ser. No. 884,642

Int. Cl.[2] H04M *17/00*

U.S. Cl. 179—6.31 **8 Claims**



1. Telephone station apparatus of the type wherein coins are deposited for the payment of telephone calls on the basis of established tariff rates and having a telephone receiver and transmitter, the telephone station apparatus comprising:

coin depositing and collection means for controlling the collection of coins deposited into said telephone station apparatus;

means responsive to said coin depositing and collection control means for generating coin credit pulses in accordance with the number of coins and denominations of coins deposited;

means responsive to said coin credit pulse generating means and a basic call time period signal for maintaining a purchased call time credit as coins are deposited in terms of a number of basic coin denomination units, said purchased call time credit being incremented by the basic coin denomination units of deposited coins and as coins are deposited at any time during a telephone call and decremented by one basic coin denomination unit upon each occurrence of said basic call time period signal, said coin depositing and collection controlling means being operative to collect all deposited coins during a telephone call after the called party has answered in accordance with an answer signal from the central office apparatus to which the telephone station apparatus is intended to be connected;

means responsive to the telephone number inputted to the station apparatus by a station apparatus user and to an identification number of the telephone station apparatus for generating a rate select signal on one of a plurality of rate select outputs in accordance with the tariff rate determined by the number inputted to the telephone station apparatus;

means responsive to said rate select outputs for generating a predetermined one of a plurality of repetitive basic call time period signals in accordance with said rate select signal;

means responsive to said purchased call time credit means for generating a warning time signal to the receiver of the telephone station apparatus when the purchased call time credit is decremented to one basic coin denomination unit corresponding to one basic call time period; and

means responsive to said purchased call time credit means for muting the audio path of the telephone station apparatus receiver and transmitter whenever the purchased call time credit is decremented to zero basic coin denomination units.

4,198,546

TIME DIVISION MULTIPLEX SWITCHING NETWORK

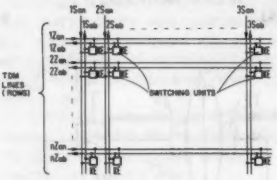
Max Schlichte, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 759,273, Jan. 14, 1977, abandoned. This application Oct. 27, 1978, Ser. No. 955,251

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1976, 2602570

Int. Cl.[3] H04Q *11/04*

U.S. Cl. 370—58 **5 Claims**



1. A time division multiplex (TDM) switching network having a plurality of TDM lines for carrying PCM information in a predetermined number of time slots corresponding to a maximum rates traffic capacity, said TDM switching network comprising:

a matrix-like arrangement of said TDM lines in a first and second group of TDM lines corresponding to rows and columns, said rows and columns thereby forming a plurality of crosspoints; and

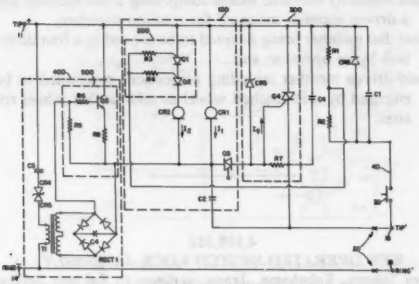
a plurality of TDM switching units each connected at one of said crosspoints in said matrix-like arrangement for selectively assigning time slots to the TDM lines connected thereto by time position conversion, each of said TDM switching units having a fixed traffic capacity defined by the maximum number of time slot connections that said switching unit is capable of making between said TDM lines, said fixed traffic capacity being dependent on the size of said TDM switching network but less than the maximum rated traffic capacity of said TDM lines, wherein the fixed traffic capacity of said TDM switching units in a large TDM switching network is smaller than in a small TDM switching network so that, in the event said TDM switching network is expanded, the fixed traffic capacity of the additional TDM switching units can be progressively reduced.

4,198,547

PULSE CIRCUIT FOR TWO WIRE ELECTRONIC PABX STATIONS

Angelo Ferraro, Stillwater, N.Y., assignor to Tele/Resources, Armonk, N.Y.

Filed Sep. 26, 1978, Ser. No. 946,051
Int. Cl.[2] H04Q *1/50*
U.S. Cl. 179—16 H **4 Claims**



1. In a private automatic branch exchange system, the combination including a plurality of two wire telephone station sets wherein the telephone station sets transmit line and network control signalling to and receive speech and ringing signalling from a central control unit over a single common pair of wires comprised of a TIP and RING lead, and wherein conventional loop current is normally present on said pair of wires while the telephone station sets are off-hook, and wherein one or more of the telephone station sets are each equipped with a conventional switch hook and a separate hold button assembly, and wherein each telephone station set so equipped is further equipped with a loop current pulse shaping circuit, including

first circuit means connected in the TIP path of said pair of wires and responsive to a control signal for interrupting the normal passage of station loop current during corresponding OFF states of said first curcuit means to shape loop current line control pulses of predetermined duration to be transmitted to said central control unit over said pair of wires,

second circuit means connected to said first circuit means, said second circuit means activated by a predetermined trigger voltage level for generating and transmitting said control signal to said first circuit means,

third circuit means, including a plurality of switchable constant current sources, connected to said second circuit means for generating said trigger voltage level, and

circuit switching means independently responsive to said switch hook and hold button assembly for selectively connecting said constant current sources of said third circuit means so as to generate said trigger voltage level at at least two distinct and different rates corresponding to the desired pulse duration of said loop current line control pulses.

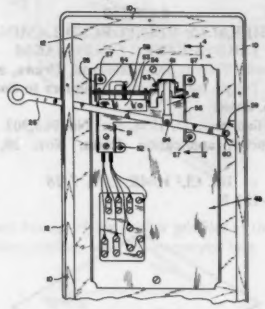
4,198,548

TELEPHONE SET WITH IMPROVED HOOK SWITCH MECHANISM

Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004

Filed Nov. 6, 1978, Ser. No. 957,930
Int. Cl.[2] H04M *1/02, 1/08*
U.S. Cl. 179—100 R **3 Claims**

1. In a telephone assembly including a rectangular housing shaped to be mounted on a vertical wall, a rectangular front door hinged to the housing, a transmitter mounted on the front cover, a hook pivotally mounted on the side of the housing for angular movement about a horizontal pivot axis, a receiver shaped to be removably supported by the hook, a switching unit, a rotatably mounted bar adjacent to said switching unit, a bracket keyed to said bar in position to actuate said switching unit when the bar is turned from a first to a second angular position, and resilient means coupled to the bracket for biasing said bar to its first angular position; the combination of: a yoke



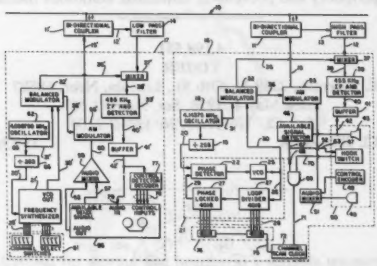
keyed to said bar and extending radially outwardly therefrom, and a linkage arm coupled to the distal end of the yoke and to an intermediate point on said hook, to cause upward movement of the distal end of the hook to turn the bar from its first to its second angular position.

4,198,549

MULTIPLEXED CENTRAL DICTATION SYSTEM

Theodore Titus, IV, Tucker, Ga., assignor to Lanier Business Products, Inc., Atlanta, Ga.

Filed Sep. 11, 1978, Ser. No. 940,881
Int. Cl.[2] G11B *19/00;* H04M *11/10*
U.S. Cl. 179—100.1 DR **20 Claims**



1. In a central recording system having at least one dictate station, a plurality of recorders, each recorder of said plurality of recorders having means for generating an available signal when said recorder is not in use, the improvement of:

ultrasonic transmitter means associated with each recorder of said plurality of recorders for transmitting a signal having a carrier frequency uniquely characteristic of said each recorder;

modulation means associated with said ultrasonic transmitter means for modulating said available signal onto said signal;

input means associated with said dictate station for providing said signal to said dictate station;

demodulator-detector means associated with said dictate station responsive to said signal when of a particular received frequency for detecting the presence of said available signal;

frequency scanning means associated with said demodulator-detector means for varying said received frequency according to a predetermined sequence of frequencies in response to the absence of said available signal and for maintaining said received frequency at said carrier frequency in response to the presence of said available signal.

4,198,550

PERIPHERALLY REINFORCED LAMINATED LOUDSPEAKER DIAPHRAGM

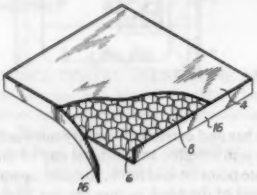
Atsushi Matsuda, Tokyo; Jun Kishigami, Urawa, and Masaaki Nishimura, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 963,902

Claims priority, application Japan, Nov. 26, 1977, 52-158845[U]

Int. Cl.[2] H04R *7/10, 7/18*

U.S. Cl. 179—181 F **11 Claims**



1. A diaphragm for a loudspeaker comprising:

first and second sheet members;

a core member sandwiched between said sheet members and secured thereto, said core member having peripheral edge portions extending between edges of said sheet members and at which said core member is of relatively low strength; and

a strip-like edging member secured to said peripheral edge portions of the core member and to said edges of the sheet members for increasing the rigidity of the diaphragm at its periphery and preventing unwanted vibrations thereat.

4,198,551

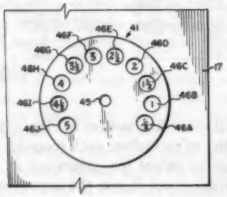
TIMER

Roy E. Peterson, 2330 N. 67th St., Lincoln, Nebr. 68507

Filed May 1, 1978, Ser. No. 901,317

Int. Cl.[2] H01H *43/10;* **H04B** *1/06*

U.S. Cl. 200—33 R **11 Claims**



1. Timing apparatus for disconnecting electrical equipment for a selected period of time, comprising:

switch means for electrically disconnecting a television set when in a first position and electrically connecting a television set when in a second position;

manually movable means having a rest position and a plurality of off-set positions for selecting a time related to the distance of said manually movable means is off-set from said rest position;

said manually moving means including means for controlling said switch means to open said switch means when said manually movable means is off-set from said rest position and to close said switch means when said manually movable means is returned to said rest position;

drive means for returning said manually movable means to said rest position at a fixed rate, whereby said off-set position determines the time said switch means is open;

said drive means including an electric timing motor and a ratchet gear;

said electric timing motor driving said ratchet gear;

said manually movable means comprising a dial member and a driven member mounted for rotation together;

said dial member being adapted to be moved in a first direction by an operator; and

said driven member including projections positioned to be engaged by said ratched wheel as said ratchet wheel rotates.

4,198,552

KEY OPERATED SWITCH LOCK ASSEMBLY

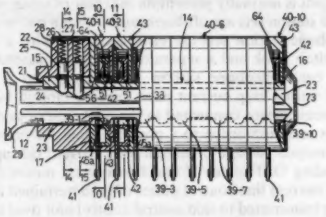
Tooru Tahara, Yokohama, Japan, assignor to Takigen Seizou Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1978, Ser. No. 930,753

Claims priority, application Japan, Aug. 2, 1977, 52-102985[U]

Int. Cl.[2] H01H *9/28, 27/06*

U.S. Cl. 200—44 **1 Claim**



1. A key operated switch lock assembly comprising a lock housing, a lock plug rotatably mounted in the housing and having an axial keyway, said plug including an elongated portion protruding rearward of the housing, a plurality of tumblers slidably mounted on the plug and in the housing, a key insertable into the keyway for permitting rotation of the plug, said key having an elongated portion insertable into the elongated plug portion, said elongated key portion having at least one operating projection on a longitudinal side edge thereof which protrudes out of the keyway, and a plurality of switches secured to the lock housing and selectively operated by the operating projection when the key is rotated, said switch lock assembly being characterized by the construction in which:

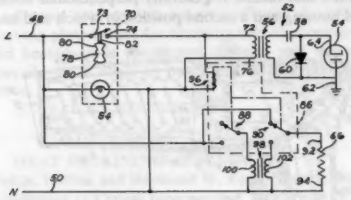
(A) said switch is of rotary type and comprises a casing, a base plate, a rotary disk interposed between the casing and the base plate, and a detent for the rotary disk, the casing, the base plate and the disk having respective central apertures in which the elongated plug portion is rotatably fitted, both the casing and the base plate having a sectorial cutout at the edge of the central aperture which permits free rotation of the operating projection of the key, said disk having a groove engaging the operating projection for permitting rotation of the disk together with the key;

(B) the base plate having at least one stationary contact of arch shape around the central aperture, the rotary disk having a moving contact which comes into contact with the stationary contact when the disk is rotated.

4,198,553
COMBINATION OVEN FULLY UTILIZING THE CAPABILITY OF A LIMITED POWER SOURCE

Raymond L. Dills, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jun. 1, 1978, Ser. No. 911,569
Int. Cl.[2] H05B 9/06
U.S. Cl. 219—10.55 B 12 Claims



1. A cooking oven which has both microwave and electrical resistance heating means, which is adapted for operation from a power source of limited current-supplying capability insufficient to concurrently supply both heating means at their respective full rated power levels, and which comprises:

said microwave heating means including a microwave energy generating system requiring less than all of the available current when operated at its full rated power level;

said resistance heating means including an electrical resistance heating element requiring substantially all of the available current when operated at its full rated power level;

means for successively energizing said microwave energy generating system and said electrical resistance heating element from the power source at their respective full rated power levels; and

means for energizing said electrical resistance heating element from the power source at a reduced power level when said microwave energy generating system is energized at its full rated power level, the reduced power level selected such that the total of the current drawn from the source to operate said microwave energy generating system at its full rated power level and of the current drawn from the source to operate said electrical resistance heating element at the reduced power level is no greater than to the power source capability.

4,198,554
METHOD AND APPARATUS FOR MICROWAVE VULCANIZATION OF EXTRUDED RUBBER PROFILES

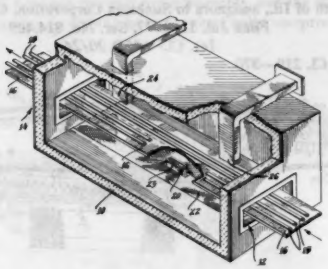
I. R. Wayne, Stamford, Conn., assignor to Cober Electronics, Inc., Stamford, Conn.

Filed Jul. 1, 1977, Ser. No. 812,365
Int. Cl.[2] H05B 9/06
U.S. Cl. 219—10.55 A 2 Claims

1. A vulcanizing oven of the type having entrance and exit ends with a conveyor belt driven between the entrance and exit ends for conveying extruded rubber profiles to be vulcanized through the oven, the improvement comprising:

at least one microwave emitter positioned below the conveyor belt and in close proximity thereto for transmitting microwave energy toward the conveyor belt and preferentially concentrating the microwave energy at the interface of the rubber profiles with the conveyor belt,

the conveyor belt having a dielectric constant of betwen about 5 to about 8 to provide a low reluctance path through the conveyor belt for the microwave energy to facilitate transmission of the microwave energy through the conveyor belt and into the rubber profiles to provide

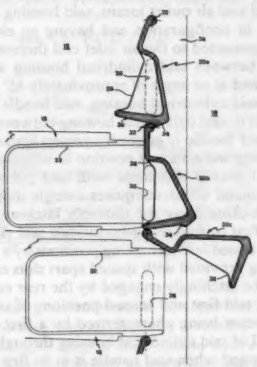


improved curing of the rubber profiles at the interface of the rubber profiles with the conveyor belt.

4,198,555
CABINET FOR STORING PREPARED MEALS ON INDIVIDUAL TRAYS

Robert Bellavoine, Pomlbieres-les-Bains, France, assignor to De Pruines Iseco S. A., Pomlbieres-les-Bains, France

Filed Jan. 9, 1978, Ser. No. 868,000
Int. Cl.[2] H05B 9/00; H05K 7/20
U.S. Cl. 219—10.55 R 12 Claims



1. Cabinet for storing and heating to a suitable temperature prepared meals carried on trays adapted to be introduced in a storage space in said cabinet, support means being provided to support said trays in superposed locations in said storage space, said cabinet comprising

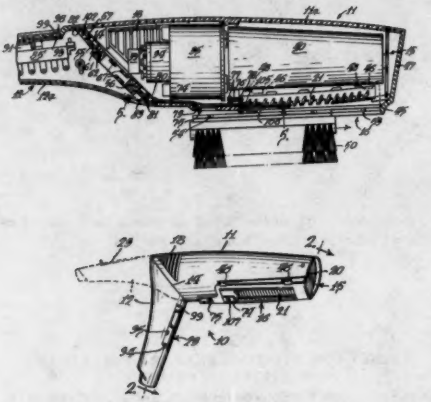
(a) at least one source of electromagnetic microwave radiation located in a chamber separated from said storage space; and

(b) individual metallic flaps each corresponding to one tray and comprising at least one movable part, said flaps being movable between first and second position for selectively separating and placing in communication said chamber and said storage space, means being provided for insulating from each other, with respect to microwave propagation, respective portions of said storage space corresponding to each flap, whereby, when the movable part of a flap is in its second position, the corresponding portion of said storage space is in communication with said chamber independently of the other portions.

4,198,556
HAIR DRYER

George C. Crowley, Winnetka, and Donald N. Jursich, Chicago, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jul. 11, 1977, Ser. No. 814,409
Int. Cl.[2] A45D *20/24*
U.S. Cl. 219—370 7 Claims



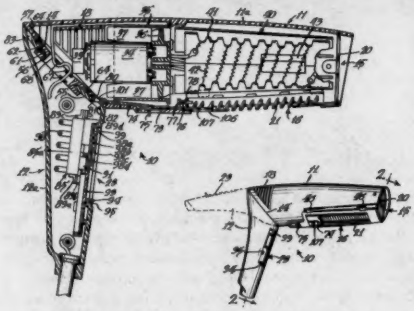
1. In a combination hair drying appliance of the type having a housing, a motor actuated fan mounted in said housing, air inlet and air outlet means disposed at opposite ends of said housing, and heater means mounted in said housing between said fan and said air outlet means, said housing being generally cylindrical in configuration and having an elongated handle rotatably connected to the air inlet end thereof with the junction plane between said cylindrical housing and said handle being disposed at an angle of approxinately 45° with respect to the axis of said cylindrical housing, said handle being rotatable with respect to said cylindrical housing between a first position in which said handle is generally perpendicular to said cylindrical housing and a second position in which said handle is in longitudinal coaxial alignment with said cylindrical housing, the improvement which comprises a single slideably mounted, elongated locking lever for slideably latching said handle in either said first or said second positions, said slideable locking lever being biased into its locking positions by a spring and said handle being provided with spaced apart slots each of which is adapted to be latchingly engaged by the rear end of said locking lever in said first and second positions of said handle, said air outlet means being characterized by a first opening at the forward end of said cylindrical housing through which heated air is discharged when said handle is in its first generally perpendicular position and by a second opening formed in the side wall of said cylindrical housing adjacent the forward end of same through which heated air is discharged when said handle is in its second longitudinally aligned position, and means permitting mounting of an adaptor on said cylindrical housing overlying said second opening only when said handle is in its second aligned position, said adaptor being provided with an upstanding plate portion adapted to block said first opening and with means for removably supporting comb and brush attachments thereon.

4,198,557
CONTROL SWITCH FOR HAIR DRYER

George C. Crowley, Winnetka, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed Jul. 11, 1977, Ser. No. 814,499
Int. Cl.[2] A45D *20/24*
U.S. Cl. 219—370 5 Claims

1. In a combination hair drying appliance of the type having a housing, a motor actuated fan mounted in said housing, air inlet and air outlet means disposed at opposite ends of said housing, heater means mounted in said housing between said fan and said air outlet means, said housing being generally cylindrical in configuration and having an elongated handle rotatably connected to the air inlet end thereof with a junction plane between said cylindrical housing and said handle being disposed at an angle of approximately 45° with respect to the axis of said cylindrical housing, said handle being rotatable with respect to said cylindrical housing between a first position in which said handle is generally perpendicular to said cylindrical housing and a second position in which said handle is in

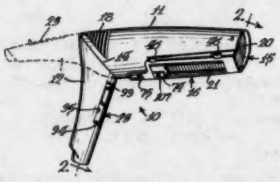


coaxial longitudinal end-to-end alignment with said cylindrical housing, and a single slidably mounted locking lever for latching said handle in either said first or second positions, the improvement which comprises a single electrical switch for controlling said heater means slidably mounted on said handle and having "high", "medium", "low", and "off" positions, said switch being movable between all of said heat positions when said handle is in said first generally perpendicular position, and blocking means provided on said cylindrical housing whereby said handle is in said second aligned position said switch engages said blocking means whereby said switch is not movable into said "high" heat position.

4,198,558
HAIR DRYER

John L. Benty, Sands Point, N.Y., assignor to Sunbeam Corporation, Chicago, Ill.

Filed Jul. 11, 1977, Ser. No. 814,658
Int. Cl.[2] A45D *20/24*
U.S. Cl. 219—370 5 Claims



1. A combination hair drying appliance comprising a housing, a motor actuated fan mounted in said housing, an air inlet means and air outlet means formed in said housing, heater means mounted in said housing between said fan and said air outlet means, said housing being characterized by an elongated cylindrical portion having an elongated handle portion connected to one end thereof, said handle portion being rotatably movable with respect to said cylindrical portion between a first position in which said handle portion is substantially perpendicular to said cylindrical portion and a second position in

which said handle portion is in longitudinal coaxial end-to-end alignment with said elongated cylindrical portion, said air outlet means including a first opening provided at the opposite end of said cylindrical portion from said connected end in longitudinal alignment with said fan and a second elongated, longitudinally extending opening provided in a side wall of said cylindrical portion adjacent said opposite end of said cylindrical portion, said fan causing air to flow through said cylindrical portion whereby said air is heated by said heating means and discharged primarily through said first opening, and adapter means selectively mountable on said cylindrical housing portion adjacent said second opening of said air outlet means and having plate means for blocking said first opening whereby said heated air is discharged through said second opening generally at an angle to the axis of said cylindrical housing portion.

4,198,559

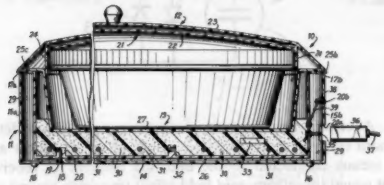
HEAT RETAINING APPLIANCE

Henry J. Walter, Wilton, and Raymond W. Kunz, Monroe, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed Dec. 20, 1977, Ser. No. 862,310

Int. Cl.[2] H05B *1/02*

U.S. Cl. 219—387 **25 Claims**



1. A heat retaining appliance comprising:

a housing, the housing being formed by a liner adapted to receive a product to be heated and a tray secured to the liner, the rate of heat transfer through the material of which the liner is made is between about 0.75 and about 5.0 B.T.U./sq. ft./hr./°F./in. and the thickness of the liner is between about 0.06 and about 0.15 in.;

a substantially non-metallic heat retaining material confined within the housing;

a heater disposed in the housing for heating the material; and

means for activating the heater, the means being removably connected with the heater so that after the heater is activated and the means is removed, the product is heated by the introduction therein through the liner of the heat of fusion of the material.

4,198,560

WALKING BEAM SHRINK TUNNEL APPARATUS

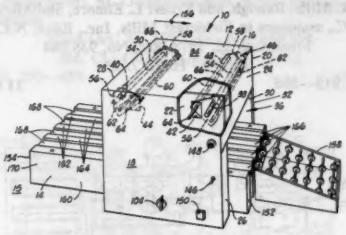
Darrel R. Dietrich, Topeka, Kans., assignor to Cavalier Products, Inc., St. Louis, Mo.

Filed Jul. 11, 1977, Ser. No. 814,309

Int. Cl.[2] F27D *3/12*

U.S. Cl. 219—388 **26 Claims**

8. A walking beam shrink tunnel apparatus, comprising: a heating chamber, said heating chamber incorporating a casing having a tunnel formed therethrough, heating means operatively associated with the heating chamber and provided for heating an object transported through the tunnel, conveyor means provided for transporting the object through the tunnel, said conveyor means incorporating a base extending through the tunnel, a plurality of spaced apart walking beams movably supported on the base in an interspersed relation with the stationary beams and extending through the tunnel, the upper surfaces of the walking beams forming a movable horizontal support surface, sliding block means operatively associated with the approximate ends of each walking beam, a drive assembly provided for furnishing movement to the sliding block means, motor means operatively associated with the drive assembly to provide for its actuation, a pair of drive rods interconnecting between the said drive assembly and the sliding block means for furnishing both longitudinally reciprocal



and vertical displacement to said sliding block means and their supported walking beams for effecting timed vertical displacement of said walking beams with respect to the stationary beams for furnishing transfer of a film wrapped article through the shrink tunnel apparatus.

4,198,561

COMBINATION SET OF A PAN AND A COOKSTOVE

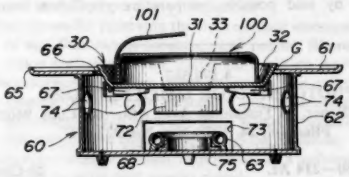
Shigeji Fujioka, Kobe, Japan, assignor to Grill Misono Co., Ltd., Kobe, Japan

Filed Oct. 7, 1977, Ser. No. 840,381

Claims priority, application Japan, Oct. 18, 1976, 51-139746[U]; Oct. 28, 1976, 51-145457[U]; Nov. 10, 1976, 51-151334[U]

Int. Cl.[2] F27D *11/02*

U.S. Cl. 219—433 **19 Claims**



1. In a set including a combination of a pan having a flat bottom and an oblique rim divergently extended from the bottom, and a cookstove used in combination with a heater to be housed therewithin and having an enclosure and a horizontal brim supported by the enclosure, the enclosure being provided with arms for putting the pan thereon and air ports, the arms being provided in such a manner that a portion of the oblique rim of the pan projecting above the brim is shorter than a portion of the oblique rim of the pan located under the broad brim, when the pan is placed on the arms wherein the improvement comprises the oblique rim of the pan having a cutaway portion with a protrusion extending downwardly from the bottom of the cutaway portion, the brim of the cookstove being broad enough to put roasted foods thereon, said brim extending radially inwardly and outwardly from the top of the enclosure for keeping an appropriate warm temperature when the set is in use and being provided with a low weir on the whole outer circumferential edge thereof to protect the foods and others from dropping therefrom, a receiver for wastes being attached to the inside of the enclosure and located directly under the protrusion when the pan is put on the arms, and a clearance of several millimeters being formed between the outside surface of the oblique rim of the pan and the inside

end of the brim when the pan is put on the arms so as to stream hot gases therethrough to make an air curtain.

4,198,562

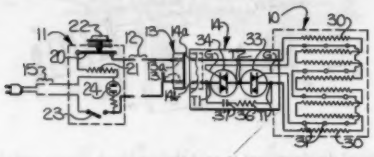
ELECTRICALLY HEATED BEDCOVER WITH OVERHEAT PROTECTIVE CIRCUIT

Edwin R. Mills, Raleigh, and Ernest L. Elmore, Smithfield, both of N.C., assignors to Fieldcrest Mills, Inc., Eden, N.C.

Filed Aug. 22, 1978, Ser. No. 935,964

Int. Cl.[2] H05B *1/02*

U.S. Cl. 219—505 **11 Claims**



1. An electrical heating apparatus protected against an overheating condition and comprising electrical heating means for generating heat upon flow of electrical current therethrough, positive temperature coefficient sensing means thermally coupled to said electrical heating means for sensing the occurrence of an overheating condition therein, a pair of gate controlled bidirectional semiconductor switches electrically connected to one another in series and in back-to-back orientation, means electrically connecting said pair of semiconductor switches to said heating means for controlling the flow of electrical current thereto, and means electrically connecting the respective gates of said semiconductor switches to one another through said positive temperature coefficient sensing means for triggering the semiconductor switches from a conductive to a non-conductive state in response to the sensing of an overheating condition by said positive temperature coefficient sensing means.

4,198,563

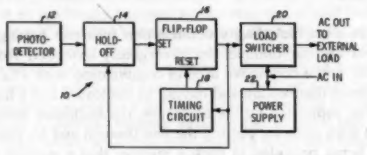
PHOTODETECTOR TIMER NETWORK

Egon H. Elssner, 58 Tuscaloosa Ave., Atherton, Calif. 94025

Filed Jul. 24, 1978, Ser. No. 927,473

Int. Cl.[2] H45B *39/03*

U.S. Cl. 250—214 AL **20 Claims**



1. A photodetector timer network, comprising:

a photodetector circuit for generating an electrical detector signal responsive to a decreasing light level;

a hold-off circuit for receiving the detector signal from the photodetector circuit and passing a responsive signal;

a flip-flop network having a set and a reset input with the set input receiving the responsive signal from the hold-off circuit such that the flip-flop is set pursuant to the responsive signal and generates an output control signal pursuant to the setting of the flip-flop network;

a first timing circuit coupled to the flip-flop network to receive the control signal, the timing cycle of the timing circuit being responsive to the control signal and generating reset signals for the flip-flop network; and p1 a load switcher network coupled to the flip-flop network and intermediate an external electrical load and an external electrical power source, the load switcher network being responsive to the control signal for controlling electrical power from the power source to the external load;

the hold-off network being further coupled to the output of the flip-flop network to receive the control signal and delay the flip-flop network from being set responsive to the detector signal if the external load is deenergized under low light conditions within a predetermined time period.

4,198,564

PYROELECTRIC DETECTOR CIRCUITS AND DEVICES

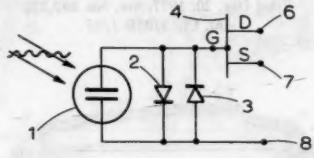
Geoffrey Baker, Ashurst, and Alexander D. Annis, Haywards Heath, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 12, 1978, Ser. No. 895,704

Claims priority, application United Kingdom, Apr. 19, 1977, 16110/77

Int. Cl.[2] G01J *1/00*

U.S. Cl. 250—338 **14 Claims**



1. A circuit arrangement comprising a radiation detector element of pyroelectric material, field effect transistor amplifier means connected to the detector element to receive an input signal therefrom, said field effect transistor having a gate electrode, at least one ultra-low leakage non-linear device connected in a part of the circuit including the gate electrode of the field effect transistor amplifier means and the detector element, said non-linear device serving to limit the excursion in one direction of the input signal to the field effect transistor amplifier means and thereby inhibit saturation under conditions of large transients in radiation input or under conditions of progressive changes in radiation input of low magnitude.

4,198,565

CHARGED PARTICLE BEAM SCANNING APPARATUS

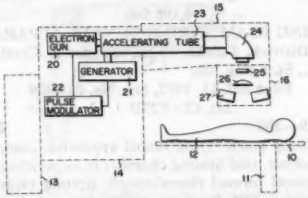
Katsuhiro Ono, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Nov. 21, 1977, Ser. No. 853,832

Claims priority, application Japan, Nov. 26, 1976, 51-141831

Int. Cl.[2] H01J *37/00*

U.S. Cl. 250—399 **10 Claims**



1. A charged particle beam scanning apparatus comprising a charged particle source for emitting a beam of charged particles; a linear accelerator for accelerating a beam of charged particles issued from said charged particle source; and a deflection device for directly receiving a beam of accelerated charged particles from said accelerator and deflecting it, at an angle of less than 180° around a reference axis, said deflection device including a magnetic field generator to cause an orbit of

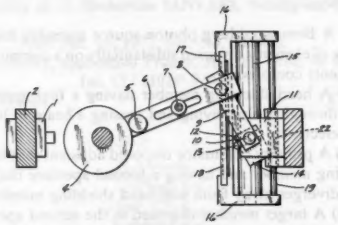
said beam of charged particles with a magnetic field whose intensity distributes along said orbit and is higher on the other side of said orbit around said reference axis than that on the inner side thereby to prevent said beam of said charged particles from diverging to different energy levels of the charged particles.

4,198,566

MOTION MECHANISM OF X-RAY FILM IN PANORAMIC RADIOGRAPHY

Timo Nieminen, Helsinki, Finland, assignor to Den-Tal-Ez Mfg. Co., West Des Moines, Iowa

Continuation of Ser. No. 870,621, Jan. 19, 1978, abandoned. This application Feb. 5, 1979, Ser. No. 9,686
Claims priority, application Finland, Jan. 24, 1977, 770210
Int. Cl.[2] G11B *1/00*
U.S. Cl. 250—439 P **6 Claims**



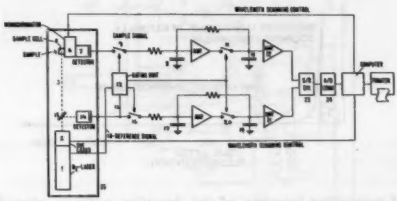
1. A panoramic X-ray machine comprising:
(a) a base member;
(b) a supporting structure rotationally mounted intermediate the ends thereof upon said base member;
(c) an X-ray source attached to one end of said rotatable supporting structure;
(d) an X-ray film cassette holder attached to the opposite end of said rotatable supporting structure, said cassette holder adapted to hold a film cassette for linear movement during radiographic exposure;
(e) means for rotationally driving said rotatable supporting structure about said base member; and
(f) means for driving the film cassette held by said film cassette holder in a linear direction relative to said rotatable supporting structure, said film cassette driving means comprising:
(1) a rod mounted on said film cassette holder with the longitudinal axis thereof parallel to the plane of the film cassette, said rod mounted for rotation about the longitudinal axis thereof;
(2) a traction wheel in frictional driving engagement with said rotatable rod; and
(3) means for rotatably driving said traction wheel such that the rotational axis of said traction wheel is varied in a predetermined angular relation with the longitudinal axis of said rotatable rod;
such that the linear speed of the film cassette relative to said film cassette holder during radiographic exposure is varied in a predetermined manner which is dependent upon the angle between the longitudinal axis of said rotatable rod and the rotational axis of said traction wheel.

4,198,567

METHOD AND APPARATUS FOR DISCRIMINATION BETWEEN SCATTERED EXCITATION RADIATION AND LOW LEVEL FAST DECAYING FLUORESCENT RADIATION

Peter Eneroth, Framnäsbacken 22, S-171 42 Solna, and Wladimir Wladimiroff, St. Olofsgatan 43B, S-753 30 Uppsala, both of Sweden

Filed Oct. 25, 1977, Ser. No. 845,195
Int. Cl.[2] G01T *1/10*; G01N *21/38*
U.S. Cl. 250—459 **19 Claims**



1. An apparatus for exciting a fluorescent substance in a gaseous, light or solid state and analyzing predetermined parts of the fluorescence emission decay of the substance, comprising:
radiation means for generating excitation radiation pulses;
drive means for generating a pretrigger signal prior to the generation of each excitation radiation pulse;
fractional deflection means for deflecting a portion of the radiation of each of said excitation radiation pulses and passing the remaining portion of the radiation of said excitation pulses to irradiate said fluorescent substance;
reference radiation detection means for receiving said deflected portion of radiation and generating a corresponding electrical trigger signal proportional to the intensity of said deflected portion of radiation;
filter means for receiving the fluorescence emission radiation of said fluorescent substance and passing filtered fluorescence radiation having particular emission wavelengths;
fluorescence radiation detector means for receiving said filtered fluorescence radiation and generating a corresponding fluorescence electrical signal proportional to the intensity of the filtered fluorescence radiation;
reference storage means responsive to a reference gating signal to store said trigger signal;
fluorescence storage means responsive to a sample gating signal to store said fluorescence signal; and
gating means responsive to said pretrigger signal to generate said reference gating signal and responsive to said trigger signal to generate said sample gating signal at a time after said excitation pulse has reached said fluorescent substance and the corresponding scattered radiation from said excitation pulse has diminished to a level of intensity that is less than the intensity of said fluorescence emission radiation.

4,198,568

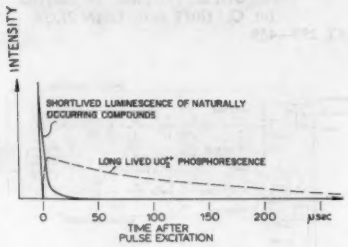
APPARATUS AND METHOD FOR URANIUM DETERMINATION

John C. Robbins, Alliston, and John D. Kinrade, Ottawa, both of Canada, assignors to Scintrex Limited, Concord, Canada

Continuation-in-part of Ser. No. 693,212, Jun. 4, 1976, abandoned. This application Feb. 21, 1978, Ser. No. 879,647
Int. Cl.[2] G01N *21/38*; G01V *5/00*; G01J *1/58*
U.S. Cl. 250—459 **8 Claims**

1. A method of detecting uranium compounds in an aqueous sample, containing uranium compounds that phosphoresce in response to ultraviolet light and other compounds which luminesce but have a shorter lifetime of phosphorescence than uranium compounds comprising the steps of:

(a) increasing the phosphorescent characteristics of the uranium compounds and simultaneously diminishing the quenching efficiency of interfering ions in the sample by adding a polyphosphate compound and a buffer;
(b) projecting ultraviolet light into the sample;
(c) terminating said projection of ultraviolet light into the sample;



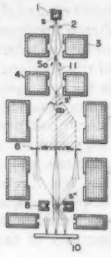
(d) measuring intensity of the decaying uranium phosphorescence at a time delay after the termination of the ultraviolet light, the time delay being longer than the time for luminescence due to materials other than uranium compounds possibly in the sample to substantially decay.

4,198,569

ELECTRON BEAM EXPOSURE SYSTEM

Hisao Takayama, Yokohama, Japan, assignor to Nippon Aviotronics Company, Limited, Tokyo, Japan

Filed Oct. 18, 1978, Ser. No. 952,280
Claims priority, application Japan, Oct. 29, 1977, 52-130072
Int. Cl.[2] A61K *27/02*
U.S. Cl. 250—492 R **12 Claims**



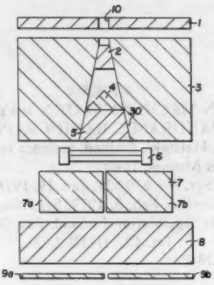
1. An electron beam exposure system having an electron source that emits electron beams and electron lenses that focus or spread said electron beams, a mask with a pattern cut therein being irradiated with said electron beams to form an image of said cut pattern on an electron sensitive substrate to thereby form an exposed pattern on said substrate, the improvement wherein the cut pattern in the mask comprises a plurality of sub-patterns that make up the exposed pattern, and the system further comprises a first deflecting means for having the electron beams sequentially select sub-patterns in the mask, and a second deflecting means that in synchronism with said first deflecting means combine the sub-patterns in said mask irradiated with said electron beams to thereby form a complete image of said exposed pattern on said substrate.

4,198,570

UNITARY SELF SHIELDED, SELF FILTERED AND FLATTENED BREMSSTRAHLUNG PHOTON SOURCE ASSEMBLY FOR RADIOTHERAPY USE

Philip McHugh; William R. Brown, both of Ottawa, and Peter W. Brown, Almonte, all of Canada, assignors to Atomic Energy of Canada Limited, Canada

Filed Apr. 7, 1978, Ser. No. 894,453
Claims priority, application Canada, Jan. 9, 1978, 294533
Int. Cl.[2] H05G *3/00*
U.S. Cl. 250—503 **5 Claims**



1. A Bremsstrahlung photon source assembly having a plurality of elements disposed substantially on a common axis, said elements comprising:
(i) A head shielding member having a first aperture therethrough for receiving and passing a beam of high energy electrons,
(ii) A primary collimator disposed adjacent said head shielding member and having a second aperture therein which diverges away from said head shielding member,
(iii) A target member disposed in the second aperture adjacent to the smallest dimension of same, said target member producing Bremsstrahlung radiation upon bombardment by said high energy electrons,
(iv) A filter disposed within said second aperture adjacent the larger dimension of same for filtering said beam,
(v) An ion chamber disposed adjacent the said primary collimator, and,
(vi) First and second collimator leaf assemblies each of which comprises a pair of separable leaves which define an adjustable slot therebetween said slots being disposed substantially symmetrically about said common axis, each pair of separable leaves being rotatable about said common axis.

4,198,571

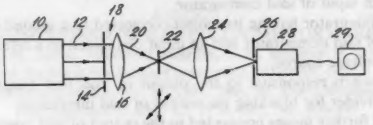
SCANNING MICROSCOPES

Colin J. R. Sheppard, Headington Quarry, England, assignor to National Research Development Corporation, London, England

Filed Apr. 24, 1978, Ser. No. 899,589
Claims priority, application United Kingdom, Apr. 28, 1977, 17826/77
Int. Cl.[2] G01W *21/30*
U.S. Cl. 250—571 **9 Claims**

1. Apparatus for use in a scanning microscope comprising first and second focusing means arranged confocally, at least one focusing means being of annular form; coherent radiation

detection means arranged to receive radiation from one focusing means; and scanning means arranged to cause relative



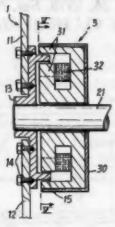
movement in the focal plane of an object to be viewed and the position of the focus.

4,198,572

REGULATED APPARATUS FOR THE GENERATION OF ELECTRICAL ENERGY, SUCH AS A WIND GENERATOR

Michel Kant, Paris, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Jun. 14, 1977, Ser. No. 806,472
Claims priority, application France, Jun. 18, 1976, 76 18549
Int. Cl.[2] H02P 9/04
U.S. Cl. 290—44 **7 Claims**



1. A regulated wind-driven electrical energy device, comprising:

a driving machinery including transmission means having an input shaft and an output shaft, said output shaft being a drive shaft, said driving machinery further including a hub mounted on said input shaft and a fixed blade propeller joined to said hub;

an induction reaction dynamo operatively connected to the drive shaft to be driven thereby, said dynamo having a group of main brushes for delivering a current at a normal output voltage and a group of secondary brushes, shifted to a fixed position angularly related to a neutral brush position, for delivering a current which is dependent on the speed of said dynamo;

means for regulating the speed of the propeller and the output voltage of the dynamo, said regulating means including an eddy-current brake having at least one induction coil, said hub serving as a rotor of the eddy-current brake; and

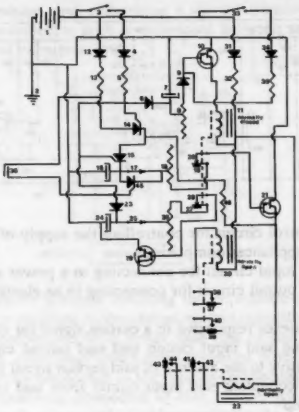
means connecting the secondary brushes of the dynamo to said induction coil of the eddy-current brake, said connecting means being operative only above a fixed speed of the dynamo greater than the minimum operating speed whereby the current delivered by the secondary brushes is supplied to the induction coil.

4,198,573

AUTOMATIC MEMORY AND ENVIRONMENTAL SECURITY SYSTEM

Paul A. Reneau, 4105 N. Montreal St., Milwaukee, Wis. 53216

Filed Jan. 9, 1978, Ser. No. 867,692
Int. Cl.[2] H01H 47/32
U.S. Cl. 307—10 R **8 Claims**

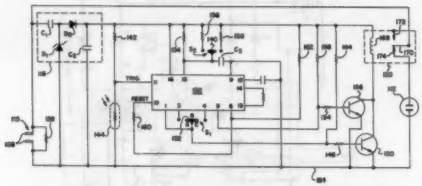


1. I claim a system, the combination comprising a storage battery, a first direct current relay with sets of normally closed contacts, a second and third direct current relay, each having sets of normally open contacts, circuits for engaging said relays, the said engaging of any said relay is by means of actuating an amplifier tied to the coil of the said relay, three RC timing units, each for engaging one relay by said means of activating said amplifier, the said first unit for engaging the said first relay, the said second unit for engaging the said second relay, the said third unit for engaging the said third relay, the said RC timing units each consisting of a resistor and condensor (capacitor), each said RC unit connected in parallel in the corresponding engaging circuit between said battery and said corresponding amplifier, the said engaging circuit for the said first relay having a primary switch in series between said battery and said relay coil, and may have additional switches in parallel to said primary switch for opening and closing said circuit, the closing of any said switches engaging said coil of said first relay and opening said normally closed contacts, the charging of said condensors for all said RC timing units is by means of closing said primary switch, and all other switches in series between said battery and any said condensor(s), the circuit between said battery and any said condensor comprising a charging circuit, the termination of said charging of any said condensor(s) is by means of opening said charging circuit(s), the complete discharge of said first condensor is by means of opening said primary switch, the complete discharge of said second and third condensors is by means of both the termination of said charging of said condensors, and the de-energizing of said coil for said first relay, the said de-energizing returning said sets of open contacts to the normally closed position, each set of said closed contacts being in series between one said second or third condensor and said second or third corresponding amplifier tied to said second or third relay coil, each said engaging circuit for said second and third relays also having one or more separate secondary switches connected in series between said corresponding condensor and said relay coil for opening and closing said engaging circuit, the energizing of said second and third relay coils closing said sets of normally open contacts for said second and third relays, the de-energizing of said relay coils returning said sets of second and third relay contacts to the normally open position.

4,198,574
TIMING CONTROL CIRCUIT

Edward G. Price, Salt Lake City, and Lewis C. Rasmussen, Bountiful, both of Utah, assignors to Beehive International, Salt Lake City, Utah

Filed Mar. 31, 1978, Ser. No. 892,373
Int. Cl.[2] H01H *43/04*; G05B *19/02*
U.S. Cl. 307—97 **11 Claims**



1. A control circuit for controlling the supply of power to electrical appliances comprising

a power input circuit for connecting to a power supply,

a power output circuit for connecting to an electrical appliance,

control means responsive to a certain signal for electrically coupling said input circuit and said output circuit, and responsive to the absence of said certain signal for electrically decoupling said input circuit from said output circuit, and

signal generation means connected to said power input circuit for automatically and intermittently producing a plurality of said certain signals, said signal generation means including

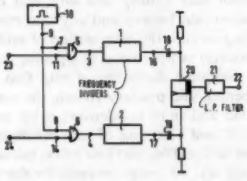
circuit means for producing a plurality of pulse trains of differing periodicity, and

means for selectively combining various ones of the pulse trains to produce said certain signals which comprise spaced apart trains of pulses.

4,198,575
CIRCUIT ARRANGEMENT RESPONSIVE TO CONTROL SIGNALS FOR GENERATING AND STORING A VARIABLE ELECTRICAL ANALOG SIGNAL

Wolfgang Lesche, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 10, 1977, Ser. No. 795,514
Claims priority, application Fed. Rep. of Germany, May 19, 1976, 2622847
Int. Cl.[2] H03K *5/20*; H03G *9/06*
U.S. Cl. 328—133 **3 Claims**



1. A circuit arrangement for storing an electric analog signal comprising:

first and second frequency dividers having the same divider ratio;

a clock generator;

a logic member connected to an input of each of said dividers through which a signal is coupled from said clock generator;

phase comparison means coupled to the outputs of said frequency dividers and containing a comparator and a feedback network coupling said comparator to said logic members;

means for supplying the electric analog signal to be stored to an input of said comparator;

an integrator having its output connected to a second input of said comparator and an input connected to a reference voltage source;

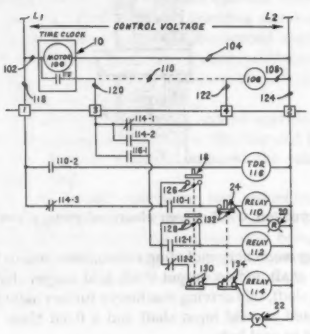
a switch responsive to the output of said first frequency divider for blocking the output of said integrator;

and further means connected to the output of said comparator for controlling said frequency dividers such that, from the instant at which the output signal of said integrator exceeds said analog input signal to the occurrence of an output pulse of said second frequency divider, a smaller number of clock pulses is fed to said first frequency divider than to said second frequency divider if, at the occurrence of the output pulse of said second frequency divider the output signal of said integrator is larger than said analog input signal, and such that, from the instant of occurrence of the output pulse of said second frequency divider to the instant at which the output signal of the integrator exceeds said analog input signal, a smaller number of clock pulses is fed to the second frequency divider than to the first frequency divider if the output pulse of the second frequency divider occurs within an integration period before the output voltage signal of the integrator reaches said analog input signal.

4,198,576
HOLIDAY CONTROL UNIT

Thomas R. Staton, Concord, Calif., assignor to American Building Maintenance Industries, San Francisco, Calif.

Filed Dec. 26, 1978, Ser. No. 973,180
Int. Cl.[2] H01H *43/20*
U.S. Cl. 307—141.8 **5 Claims**



1. A unit for interrupting normal operation of an electrical circuit for one cycle energized during such a cycle by a time clock, which comprises:

(a) A first relay connected to said time clock to set said unit in operation,

(b) a start switch connected to close a first set of contacts in said first relay,

(c) a second relay which has a turn-off time delay serially connected to a second set of contacts in said first relay, said second relay having a set of contacts serially connected to said time clock,

(d) a third relay having a first set of contacts serially connected to said set of contacts of said second relay, and

(e) a fourth relay having a first set of contacts connected to be opened when said start switch closes said first set of contacts of said fourth relay, said first set of contacts of said fourth relay being serially connected to a second set of contacts in said third relay, connected to close when

said start switch closes said first set of contacts in said first relay.

4,198,577

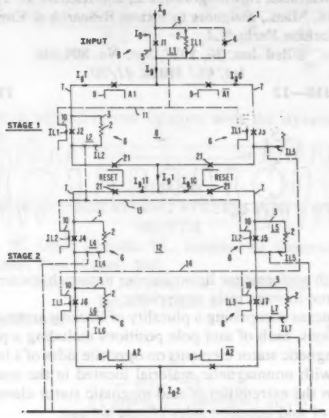
LOOP DECODER FOR JOSEPHSON MEMORY ARRAYS

Sadeg M. Faris, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 807,951, Jun. 20, 1977, abandoned. This application Aug. 23, 1978, Ser. No. 936,147

Int. Cl.[2] **H03K** *19/195, 3/38*

U.S. Cl. 307—212 **37 Claims**



1. A multi-stage decoder circuit comprising:

an input circuit which has at least two output portions,

address loop means disposed in each stage of said multi-stage decoder circuit at least a portion of said loop means of the first stage of said multi-stage decoder being connected to said input circuit, at least a portion of each of said loop means of each succeeding stage after the first stage being connected to at least a portion of said loop means of the preceding stage,

at least a pair of actuable address devices disposed in one of a series and parallel electrically connected relationship with each said loop means, the actuation of one or the other of which accesses $2^N/2$ circuits which are connected to said loop means each of said circuits including an actuable device and a pair of output portions, the output portions of said circuits of the first stage to the Nth − 1 stage being arranged so that 2^{N+1} outputs are available per stage each said output portion controlling an actuable device like said actuable device of a circuit like said circuits, the output portions of said Nth stage being electrically connected to 2^N driver circuits, said at least two output portions controlling actuable devices of said circuits of said first stage and wherein N=1,2,3,4 . . . ;

4,198,578

TRANSISTOR SWITCHING CIRCUITS WITH SHORTENED RESPONSE TIMES

Akio Ozawa; Masaharu Sakamoto, and Hideo Ito, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 26, 1978, Ser. No. 900,375

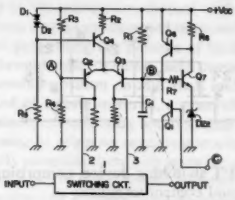
Claims priority, application Japan, Apr. 28, 1977, 52-54982[U]

Int. Cl.[2] **H03K** *17/04, 17/60*

U.S. Cl. 307—246 **3 Claims**

1. In a transistor switching circuit including first switching means comprising at least one switching transistor, a capacitor connected between the base of said transistor and ground, a source of charging current for said capacitor, a resistor connected between said source and said capacitor, and second switching means for controlling the application of said charging current to said capacitor, whereby the conduction state of said transistor is reversed as the potential on said capacitor passes through a switching region, the improvement characterized by:

(a) a variable impedance element connected in parallel with said resistor, and comprising a second transistor whose emitter-collector path is connected between said source and said capacitor, and



(b) means for abruptly lowering the impedance of said element in response to the charge on said capacitor reaching a predetermined level lower than that of said switching region, and comprising a third transistor whose collector is directly connected to the base of said second transistor and resistively connected to said source, whose base is resistively connected to said capacitor, and whose emitter is connected to ground through a Zener diode, whereby the charging characteristic for said capacitor has an increased slope and the time required for the charge on said capacitor to pass through said switching region is reduced.

4,198,579

INPUT CIRCUIT FOR PORTABLE ELECTRONIC DEVICES

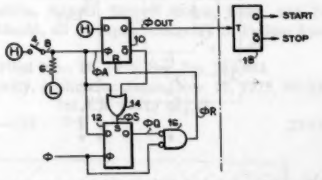
Heihachiro Ebihara; Fukuo Sekiya, both of Tokorozawa, and Takashi Yamada, Sayama, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1977, Ser. No. 862,539

Claims priority, application Japan, Dec. 25, 1976, 51/156681; Sep. 30, 1977, 52/118093; Oct. 19, 1977, 52/125394

Int. Cl.[2] **H03K** *5/00*

U.S. Cl. 307—247 A **10 Claims**



1. An input circuit for portable electronic devices comprising:

(a) an exteriorly operable member for delivering an operating signal to a portable electronic device as its input;

(b) a first flip-flop activated for inverting the output thereof when a raising up edge of said operating signal is received;

(c) a second flip-flop for receiving said operating signal in response to a periodic signal;

(d) a reset signal preparing circuit supplied with an output delivered from said second flip-flop and preparing a reset signal for said first flip-flop; and

(e) a toggle type flip-flop connected to an output terminal of

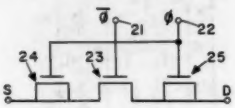
said first flip-flop for generating a start/stop signal for controlling the portable electronic device.

4,198,580

MOSFET SWITCHING DEVICE WITH CHARGE CANCELLATION

Daniel D. Culmer, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 30, 1978, Ser. No. 910,698
Int. Cl.[2] H03K *17/72, 17/16, 17/66;* **H01L** *29/78*
U.S. Cl. 307—251 **3 Claims**



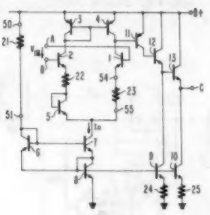
1. A MOSFET switching device, comprising
first and second control terminals;
a first MOSFET having its gate connected to the first control terminal;
a second MOSFET having its gate connected to the second control terminal and its source and drain both connected to the source of the first MOSFET; and
a third MOSFET having its gate connected to the second control terminal and its source and drain both connected to the drain of the first MOSFET;
wherein when complementary control signals are applied to the first and second control terminals, charge spikes occurring at the source and drain of the first MOSFET device when the conduction state of the first MOSFET is changed are cancelled by charge spikes occurring simultaneously in the second and third MOSFET's.

4,198,581

TEMPERATURE COMPENSATING COMPARATOR

Adel A. A. Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 13, 1977, Ser. No. 841,966
Int. Cl.[2] H03K *17/90*
U.S. Cl. 307—310 **11 Claims**



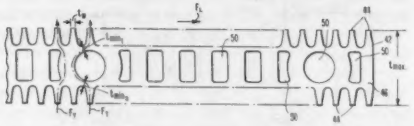
1. An emitter coupled differential comparator arrangement in which changes in the switching point of said comparator result from a temperature-responsive differential-mode component between the sources being compared, comprising:
first and second transistors;
a current source;
means coupling said current source to the emitters of said first and second transistors by first and second current paths;
energization and utilization means coupled to the collector electrodes of said first and second transistors;
first and second voltage sources coupled to the bases of said first and second transistors, said first voltage source having a temperature-responsive differential-mode component relative to said second whereby said changes in said switching point result; and
temperature-responsive conductive means coupled in said first current path for offsetting said differential comparator as a function of temperature to compensate for said temperature-responsive component between said sources for producing a component poled to reduce said temperature-dependent change in the switching point.

4,198,582

HIGH PERFORMANCE STEPPER MOTOR

Dan W. Matthias, Downingtown, Pa., and Richard D. Thornton, Concord, Mass., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 24, 1977, Ser. No. 809,646
Int. Cl.[2] H02K *41/00*
U.S. Cl. 310—12 **11 Claims**



1. A high performance linear stepper motor characterized by a high force-to-mass ratio comprising:
stator means comprising a plurality of linearly arranged pole positions, each of said pole positions including a plurality of magnetic stator elements on opposite sides of a linear air gap with nonmagnetic material located in the spaces between the extremities of said magnetic stator elements on each of said opposite sides of said air gap;
winding means associated with said stator means at said pole positions on only one side of said air gap for generating flux paths transverse to said air gap; and
passive motive means comprising a slider located within said air gap comprising a plurality of passive magnetic motive elements and nonmagnetic discontinuities including nonmagnetic material separating said motive elements, said slider being short relative to the overall length of said air gap, said motive elements having extremities juxtaposed to the extremities of said stator elements so as to close said transverse flux paths through said motive elements, said motive means further comprising nonmagnetic discontinuities including said nonmagnetic material so as to eliminate any substantial longitudinal flux leakage.

4,198,583

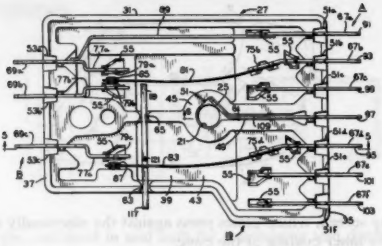
DYNAMOELECTRIC MACHINE AND SWITCH AND TERMINAL ASSEMBLY COMBINATION

Wesley K. Anderson, DeKalb, and Willard H. Stanley, Sterling, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 600,880, Jul. 31, 1975, Pat. No. 4,054,767. This application Jun. 22, 1977, Ser. No. 808,805
Int. Cl.[2] H02K *11/67*
U.S. Cl. 310—71 **29 Claims**

1. In a dynamoelectric machine having a winding circuit, a switch device having a switch means accommodating chamber with switch means movable therein for controlling at least the winding circuit of the dynamoelectric machine and being removably assembled to a structural component of the dynamoelectric machine, and grounding means disposed in part within the switch device adjacent said chamber and having a portion exposed exteriorly of the switch device adapted for connecting the dynamoelectric machine to ground; the improvement comprising means movable through the switch device so as to be isolated from the switch means within the chamber and into assembled engaging relation with the part of the grounding means within the switch device and also the dynamoelectric structural component for removably assem-

bling the switch device to the dynamoelectric machine structural component and for electrically connecting the grounding



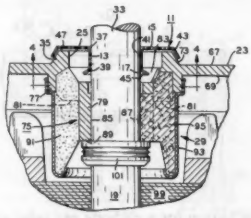
means in a ground circuit relation with the dynamoelectric machine.

4,198,584

LUBRICANT RETAINING SYSTEM FOR A PRIME MOVER

Charles W. Otto, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Mar. 24, 1978, Ser. No. 889,962
Int. Cl.[2] H02K *5/10*
U.S. Cl. 310—90 **10 Claims**



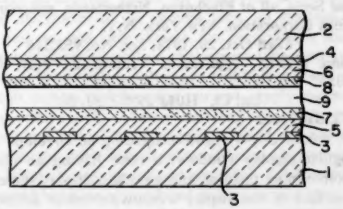
1. A prime mover adapted to drive an apparatus and mounted in a preselected position with respect thereto so that a fluid of the apparatus may leak therefrom toward the prime mover with the fluid being incompatible with a lubricant utilized to lubricate the prime mover, the prime mover comprising a stationary assembly including at least an upper end plate with said at least upper end plate being arranged so as to mount at least adjacent the apparatus, an exterior face on said at least upper end plate upon which the leakage fluid from the apparatus may collect, another face on said at least upper end plate and disposed generally opposite said exterior face, a shaft receiving opening in said at least upper end plate and extending therethrough at least between said exterior face and said another face, and a generally annular extension integrally formed on said exterior face about said opening, said extension having a generally annular upper surface predeterminately spaced generally axially beyond said exterior face and having another generally annular surface interposed between said upper surface and said exterior face with said another surface being effective to prevent the entry into said opening of any leakage fluid on the end plate; a rotatable assembly arranged in magnetic coupling rotation with said stationary assembly upon energization of the prime mover and including a rotatable shaft extending generally coaxially with said opening, an exterior end section on said shaft extending beyond said upper surface of said extension with said exterior end section being adapted for driving association with the apparatus and for subjection to leakage flow from the apparatus of the incompatible fluid; bearing means associated with said at least upper end plate for rotatably journaling said shaft therein, said bearing means being arranged generally coaxially with respect to said opening and predeterminately disposed generally axially beyond said another face in a direction away from said exterior face of said at least upper end plate; a lubrication system to effect the supply of the lubricant to said bearing means and said shaft, said lubrication system including means arranged in said opening and associated with said shaft for transferring the lubricant to said shaft in said bearing means, means associated with said lubricant transferring means for containing the lubricant and releasing it to said lubricant transferring means, and means associated with said another face of said at least upper end plate for disposing said lubricant containing and releasing means generally in the association thereof with said lubricant transferring means; and means disposed in an assembly position on said shaft for preventing the passage of both the lubricant and the fluid through said opening, said passage preventing means in its assembly position on said shaft including an integral body formed of a resin material, a generally annular axially extending sleeve on said body and disposed at least in part within said opening in gripping engagement with said shaft so as to be conjointly rotatable therewith upon the energization of the prime mover, a pair of opposite end portions on said sleeve, one of said opposite end portions defining a generally annular flange formed at an angle with respect to said sleeve so as to extend radially outwardly of said shaft generally toward a part of said lubricant containing and releasing means, said flange being operable in response to the rotation of said shaft to interrupt the flow of any lubricant from said bearing means along said shaft toward said opening and to sling the interrupted lubricant generally radially outwardly toward said part of said lubricant containing and releasing means so as to be captured thereby, the other of said end portions defining another generally annular flange extending radially outwardly of said shaft across said opening and over said upper surface of said extension on said exterior face of said at least upper end plate, and a generally annular depending lip on said another flange disposed closely adjacent said another surface of said extension on said exterior face of said at least upper end plate, said another flange being effective to interrupt the incompatible fluid in the event of any leakage flow thereof generally along said exterior end section of said shaft toward said opening and being operable to sling the interrupted incompatible fluid generally radially outwardly away from said opening in response to the rotation of said shaft and wherein said opening is large enough to receive said first named flange upon the movement of said passage preventing means toward its assembly position on said shaft from exteriorly of the prime mover.

4,198,585

GAS DISCHARGE PANEL

Hideo Yamashita, Akashi; Shizuo Andoh, Kobe, and Tsutae Shinoda, Akashi, all of Japan, assignors to Fujitsu Limited, Japan

Filed Nov. 18, 1976, Ser. No. 742,993
Claims priority, application Japan, Nov. 19, 1975, 50/139481
Int. Cl.[2] H01J *61/30*
U.S. Cl. 313—218 **27 Claims**



12. In a gas discharge display panel having discharge points defined by opposing sets of electrodes on opposing substrates across a gas filled volume, and each of said electrodes coated with a dielectric layer, the improvement comprising:

an overcoat layer contacting said gas filled volume and formed over said dielectric layer between each of said electrodes and said gas filled volume at least at said defined discharge points, said overcoat layer comprising a mixture of at least two alkaline earth metal compounds.

4,198,586

HIGH PRESSURE METAL VAPOR DISCHARGE LAMP AND SEAL STRUCTURE THEREFOR

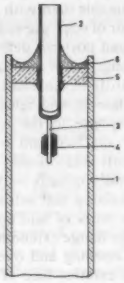
Jacobus de Jong, and Gerardus A. P. M. Cornelissen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 5, 1978, Ser. No. 893,674

Claims priority, application Netherlands, Apr. 15, 1977, 7704135

Int. Cl.³ H01J *61/36*

U.S. Cl. 313—220 **1 Claim**



1. A high-pressure metal vapor discharge lamp having an elongated ceramic discharge tube which is provided at at least one end with a ceramic end plug having an electrode current supply element extending therethrough, said end plug being axially displaced inward from the end of the discharge tube and fused to the inner wall of the discharge tube by means of sintering, said lamp further including a glass seal disposed in the annular space intermediate said current supply element and said discharge tube and adjacent to said end plug and which glass seal projects axially beyond the axial extremity of said discharge tube at least in the region of the joint between said end plug and said current supply element, said lamp having no member covering said glass seal which extends between said plug and said tube.

4,198,587

COLOR CRT SHIELDING CONE HAVING FOUR METAL PLATES EXTENDING FROM CORNERS OF SMALLER APERTURE TO WALL COATING

Martinus C. M. Verhoeven; Andrianus M. Kersten, and Giovanni Serio, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

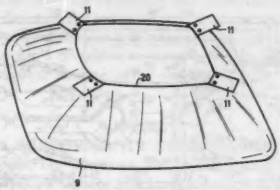
Filed Oct. 20, 1978, Ser. No. 953,326

Claims priority, application Netherlands, Nov. 15, 1977, 7712535

Int. Cl.³ H01J *29/07, 31/20*

U.S. Cl. 313—402 **3 Claims**

1. A colour display tube comprising an envelope having a rectangular display window, a cone having an electrically conductive inner coating, and a neck, a display screen on the inner surface of the display window, a colour selection electrode disposed in said envelope at some distance in front of the display screen, means to generate at least one electrode beam disposed in the neck and a magnetic screening cap which extends in the cone from the colour selection electrode towards the neck, the edge of the magnetic screening cap adjacent the neck being provided with four radially extending resilient metal plates bent in the direction of the corners of the



display screen, which plates press against the electrically conductive inner coating of the cone.

4,198,588

ANODE BUTTON FOR A CATHODE RAY TUBE

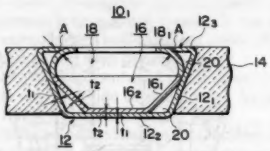
Takashi Kuze, Yokohama; Hajime Makio, Shiga, and Yukio Baba, Hikone, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha and Nippon Electric Glass Co., Ltd., both of Kawasaki, Japan

Filed Jul. 27, 1978, Ser. No. 928,616

Claims priority, application Japan, Aug. 1, 1977, 52-91422; Aug. 1, 1977, 52-91423

Int. Cl.³ H01J *29/92, 5/52*

U.S. Cl. 313—479 **3 Claims**



3. An anode button for a cathode ray tube, comprising:

an outer electrically conductive cup whose peripheral wall is made thin so as to be well sealed to a glass bulb constituting the cathode ray tube envelope and whose bottom is exposed to the interior of the cathode ray tube; and

an inner cup fixed and disposed in the outer cup for substantially increasing the thickness of said bottom in its entirety in order to reduce X-ray leakage, a portion of the inner cup which faces said bottom to be exposed to X-ray being thicker than the remaining portion, said peripheral wall and said inner cup having enclosed spaces therebetween for preventing damage to the seal between said peripheral wall and said glass bulb.

4,198,589

SPECTRAL SOURCE, PARTICULARLY FOR ATOMIC ABSORPTION SPECTROMETRY

Shinji Mayama, Katsuta; Masataka Koga, Katsuta; Yoji Arai, Katsuta, and Konosuke Oishi, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 24, 1978, Ser. No. 871,807

Claims priority, application Japan, Jan. 24, 1977, 52-5851; Apr. 14, 1977, 52-43206

Int. Cl.³ H05B *41/24*

U.S. Cl. 315—267 **17 Claims**

1. A spectral source comprising

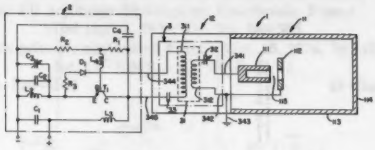
a lamp having a bulb and a base,

a first electrode having a hollow portion therein, said first electrode being disposed within said bulb and containing an element emitting a desired spectrum,

a second electrode disposed within said bulb,

a high-frequency source connected between said first and

second electrodes for establishing a high-frequency discharge therebetween to cause sputtering of said first electrode and excitation of a radiation having said desired spectrum,



a gas contained in said bulb for maintaining said discharge, and

a window provided by said bulb for transmitting said radiation.

4,198,590

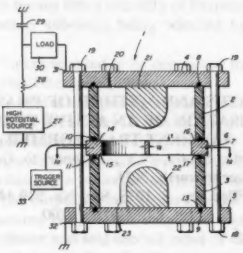
HIGH CURRENT TRIGGERED SPARK GAP

Neville W. Harris, Acton, Mass., assignor to High Voltage Engineering Corporation, Burlington, Mass.

Filed Nov. 16, 1978, Ser. No. 961,403

Int. Cl.² H01J *17/30*

U.S. Cl. 315—335 **5 Claims**



1. A triggered spark gap comprising support means, a pair of insulated main electrodes mounted opposite each other on said support means so as to form a gap therebetween; first electrical means operatively associated with said main electrodes for creating a potential difference therebetween; at least one trigger electrode having at least a portion thereof located in the gap between said main electrodes, said portion defining an arc receiving region having a thickness to width ratio greater than one; and second electrical means for connecting the trigger electrode to a source of triggering and biasing electrical potential.

4,198,591

VERTICAL DEFLECTING CIRCUIT

Masayuki Ohmori, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 16, 1978, Ser. No. 934,033

Claims priority, application Japan, Aug. 18, 1977, 52-98979

Int. Cl.² H01J *29/70*

U.S. Cl. 315—371 **7 Claims**

1. In a vertical deflecting circuit for a television receiver of the type having

a first signal source for supplying a first signal having a sawtooth wave shape and a vertical period,

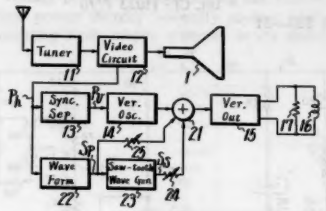
a second signal source for supplying a correcting signal having a horizontal period,

a vertical output circuit for amplifying said first signal,

a vertical deflecting coil connected to said vertical output circuit,

the improvement comprising:

mixing means for mixing said first signal and said correcting signal, and



a resistor connected in parallel with said deflecting coil and being of a proper resistance for forming an integrator with said vertical deflecting coil for integrating said correcting signal.

4,198,592

CIRCUIT FOR STABILIZING ELECTRON BEAM FOCUSING OF AN ELECTROMAGNETIC FOCUSING TYPE CAMERA TUBE

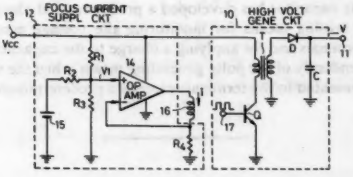
Tadayoshi Miyoshi; Shintaro Nakagaki; Itsuo Takanashi, all of Yokohama; Koichiro Motoyama, Ninomiya; Sumio Yokokawa, Yokohama, and Kenichi Miyazaki, Sagamihara, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Sep. 13, 1978, Ser. No. 941,870

Claims priority, application Japan, Sep. 16, 1977, 52-111394

Int. Cl.² H01J *29/58*

U.S. Cl. 315—382 **5 Claims**



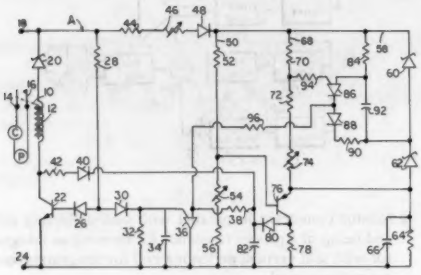
1. In an electromagnetic focusing type camera tube having high voltage generating means for supplying an operational voltage to electrodes of the camera tube, an electron beam focusing coil on said tube, means for supplying a focusing current to said focusing coil on the camera tube, and voltage source means for applying voltage to said high voltage generating circuit and to said focusing current supply means, said focusing current supply means comprising an operational amplifier having an output terminal connected to one end of said focusing coil, the other end of said coil being connected to an inverting input of said operational amplifier, a detection resistor connected between ground and said other end of focusing coil, a first resistor connected between said voltage source means and a non-inverting input terminal of said operational amplifier, a reference voltage source, and a second resistor connected between said reference voltage source and said non-inverting input terminal of the operational amplifier.

4,198,593

BATTERY CHARGER CONTROL DEVICE

Gray C. Ballman, 30 Portland Dr., St. Louis, Mo. 63131

Filed Aug. 19, 1977, Ser. No. 825,943
Int. Cl.[2] H02J 7/10
U.S. Cl. 320—31 **3 Claims**



1. A battery charge control device for use with a battery charger operatively connected to a source of alternating power, said device comprising a pair of terminals;

a relay having a coil and a pair of normally open relay contacts, said contacts being interposed between the battery charger and the source of power in such manner that power will flow from the source to the charger when the coil is energized;

transistor switching means operatively connected to the terminals and to the coil and adapted for going into conduction and permitting energizing current to flow through the coil when a voltage is applied across the terminals;

a capacitor;

pulse generating means operatively connected to the capacitor for developing a charge in the capacitor when a voltage is applied across the terminals, said pulse generating means integrally including timing means for regulating the period of time required to bring the capacitor to a charged condition;

cutoff means for turning off the transistor switching means and stopping the flow of current through the coil when the capacitor has developed a predetermined charge;

and sensing means for monitoring the voltage across the terminals and for applying a charge to the capacitor independently of the pulse generating means when the voltage presented to the terminals exceeds a predetermined value.

4,198,594

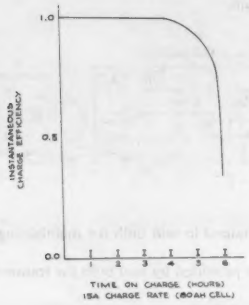
METHOD OF CHARGING A VENTED ALKALINE ELECTROLYTE-CONTAINING ELECTROCHEMICAL CELL

Harvey N. Seiger, Waterford, Conn., and Thomas T. Terjesen, Westerly, R.I., assignors to Yardney Electric Corporation, Pawcatuck, Conn.

Filed Apr. 25, 1978, Ser. No. 899,939
Int. Cl.[2] H02J 7/04
U.S. Cl. 320—43 **9 Claims**

1. An improved method of charging a vented alkaline electrolyte-containing electrochemical cell to about full charge without overcharging the same, said method comprising:

a. charging a vented alkaline electrolyte-containing electrolyte cell at about a constant current and during said charging at least periodically measuring the charging efficiency of said cell in accordance with the formula $E=(1-15.8/I)V$ where I is the charging current in amperes and V is the gas generation rate in cc per second by determining the rate of gas generation in said cell and the charging current; and,



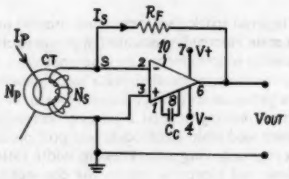
b. terminating said charging of said cell when said charging efficiency substantially decreases, signifying an about full charge on said cell.

4,198,595

APPARATUS AND METHOD OF PHASE SHIFT COMPENSATION OF AN ACTIVE TERMINATED CURRENT TRANSFORMER

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Somersworth, N.H.

Filed Sep. 5, 1978, Ser. No. 939,447
Int. Cl.[2] G01R 19/00
U.S. Cl. 323—6 **12 Claims**



1. The combination comprising:

(a) a current transformer having primary and secondary windings, said transformer effecting a phase shift in the current applied to the primary winding thereof;

(b) an operational amplifier having a pair of compensation terminals, inverting and non-inverting input terminals at substantially the same potential connected across said secondary winding and an output terminal for providing an output voltage substantially proportional to the current in said transformer;

(c) a resistance element connected between said inverting input terminal and said output terminal; and

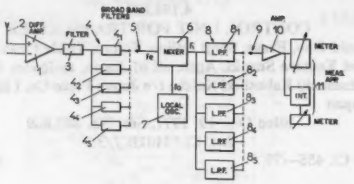
(d) a capacitive element connected between said pair of compensation terminals for changing the phase response of said operational amplifier to compensate for the phase shift in the current in said transformer to thus minimize the phase angle between the transformer current and the output voltage of said operational amplifier.

4,198,596

DEVICE FOR DIRECT AND CONTINUOUS RECEIVING AND MEASURING OF ELECTRICAL MAGNETIC AND ACOUSTIC SIGNALS

Michel Waeselynck; Lucien Gerbel, both of Pau, and René Corbefin, Toulouse, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Oct. 7, 1977, Ser. No. 840,385
Claims priority, application France, Oct. 15, 1976, 76 31009
Int. Cl.[2] G01V 3/12; G01R 23/16
U.S. Cl. 324—344 **15 Claims**



1. A direct and continuous receiving and measuring device for electrical, magnetic or acoustic signals comprising:

pick-up means for picking up said electrical, magnetic or acoustic signals;

first filtering means having an input connected to said pick-up means and dividing the frequency range provided by said pick-up means into a plurality of frequency subranges, each frequency subrange being selected by a band-pass filter;

first selector means adapted to be connected to the output of said band-pass filters;

local oscillator means comprising a quartz oscillator delivering a reference frequency, a circuit loop comprising in series a phase comparator having first and second inputs and an output and connected by said first input to said quartz oscillator, a voltage controlled oscillator connected to the output of said phase comparator and a divider connected between an output of said voltage controlled oscillator and said second input of said phase comparator, said circuit loop further comprises a low-pass filter connected between the phase comparator and the voltage controlled oscillator and delivering an error signal to lock the voltage controlled oscillator on or close to the frequency to be detected;

mixing means connected to said output of said voltage controlled oscillator;

second filtering means comprising a plurality of low-pass filters mounted in parallel, an input of said second filtering means being connected to an output of said mixing means;

second selector means adapted to be connected to an output of said low-pass filters of said second filtering means; and

measuring means connected to said second selector means for measuring the value of the signals detected by the pick-up means.

4,198,597

NEGATIVE CELL DETECTOR FOR A MULTI-CELL FUEL CELL STACK

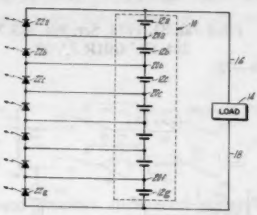
Richard D. Sawyer, Canton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 23, 1978, Ser. No. 936,278
Int. Cl.[2] G01N 27/42
U.S. Cl. 324—434 **5 Claims**

1. A detector for sensing a faulty cell among a plurality of series connected voltage producing cells forming a source of DC electrical power, comprising:

a plurality of light emitting diode means having an anode and a cathode which are capable of being biased to a conducting state by a positive anode-to-cathode voltage, and capable of being biased to a nonconducting state by a positive cathode-to-anode voltage, and

means connecting each anode and cathode to the negative and positive junctions, respectively, of each of said plurality of voltage producing cells forming said source of DC electrical power thereby normally reverse biasing said light emitting diode means, whereby in the absence of a



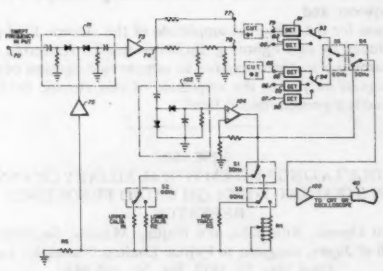
voltage output from any one of said voltage producing cells, the remaining voltage producing cells of said source of DC electrical power cause a positive anode-to-cathode voltage on that light emitting diode coupled to that one cell producing no voltage so that said light emitting diode means changes from its nonconducting state to its conducting state thereby emitting light.

4,198,598

SWEPT FREQUENCY CIRCUIT FOR PRECISION GAIN OR LOSS MEASUREMENTS

William A. Rheinfelder, 3542 W. Northview, Phoenix, Ariz. 85021

Filed Jun. 12, 1978, Ser. No. 914,379
Int. Cl.[2] G01R 27/00, 13/20
U.S. Cl. 324—57 SS **4 Claims**



1. In a test system for producing a trace on an oscilloscope, said system receiving a swept frequency signal with a predetermined sweep rate, and having a gain control means for controlling the level of said received swept frequency signals, the improvement comprising:

(a) a first trace signal producing circuit having a first detector and having means for connecting said first detector in series with a circuit to be tested for producing a first trace signal;

(b) a second trace signal producing circuit connected to receive said gain controlled swept frequency signal including a second detector and a plurality of resistors and including first switching means for sequentially connecting said second detector in series with each of said resistors and means connecting said resistors to the gain control of said swept frequency signal;

(c) a second switching means connected to said detectors and to said oscilloscope for sequentially connecting said detectors to said oscilloscope; and

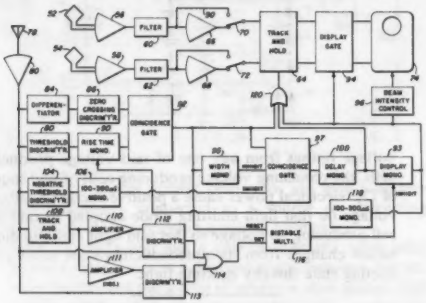
(d) said first and second switching means being synchronized for sequentially applying said trace signal producing circuits to said oscilloscope.

4,198,599

GATED LIGHTNING DETECTION SYSTEM

Edmund P. Krider, and Ralph C. Noggle, both of Tucson, Ariz., assignors to The University of Arizona Foundation, Tucson, Ariz.

Filed Jul. 31, 1978, Ser. No. 929,751
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—72 **19 Claims**



1. A lightning detection system comprising:

means for detecting the magnetic field produced by a lightning discharge and for providing signals representative of the amplitude and direction of said magnetic field relative to said system;

means for sampling portions of said signals and providing representations of said sampled portions;

means for utilizing said representations to generate an indication of the direction of said discharge relative to said system; and

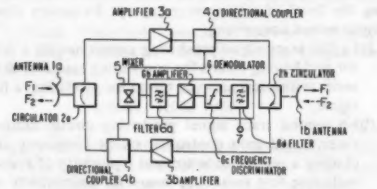
means for detecting the amplitude of the electric field produced by said lightning discharge and for rendering said sampling means operative to sample said portion of said signals only after the amplitude of said electric field exceeds a predetermined level.

4,198,600

DEMODULATING SYSTEM FOR AUXILIARY CHANNEL IN STRAIGHT-THROUGH RADIO FREQUENCY REPEATER

Takuro Oguchi, Kawasaki, and Hajime Masuda, Sagamihara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 25, 1978, Ser. No. 909,443
Claims priority, application Japan, May 31, 1977, 52/63710
Int. Cl.[2] H04B *7/14*
U.S. Cl. 455—15 **16 Claims**



1. A demodulating method for auxiliary channel signals in a straight-through radio frequency repeater which relays microwave signals frequency-modulated by baseband signals composed of main communication channel signals and auxiliary channel signals having a different frequency band from that of said main communication channel signals, comprising:

receiving a plurality of said microwave signals having different carrier frequencies;

branching two of said plurality of microwave signals thus received;

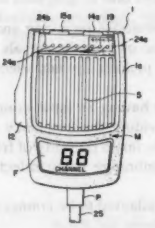
producing a difference frequency signal between said two branched microwave signals; and demodulating said difference frequency signal to regenerate said auxiliary channel signals.

4,198,601

CONTROL UNIT FOR TRANSCEIVER

Atsushi Ono, Fussa; Shoji Fujino, Tokyo; Yukio Ozaki, Tateno, and Kentaro Suzuki, Ageo, all of Japan, assignors to Nippon Atsudenki Kabushiki Kaisha t/a Japan Piezo Co. Ltd., Tokyo, Japan

Filed Oct. 19, 1977, Ser. No. 843,669
Int. Cl.[2] H01B *1/38*
U.S. Cl. 455—73 **16 Claims**



1. A control unit for a transceiver comprising:

(a) a housing sized to be conveniently held in one hand,

(b) a transmit/receive switch, a gain control, and a squelch control, each mounted within the housing and operable therefrom, each being electrically connected over a multi-conductor cord to said transceiver for remote control of the transceiver,

(c) an electroacoustic transducer, mounted within the housing and electrically connected to the transceiver through the multi-connector cord,

(d) a frequency selecting means mounted within the housing for selecting any one of a number of preset operating frequencies, the frequency selecting means comprising:

(1) a programmable random access memory (RAM) for storing codes indicative of each of the preset operating frequencies,

(2) a read only memory (ROM) having a first output connected to the RAM for controlling access to the stored codes,

(3) a switching circuit connected to the RAM and the ROM for switching the selected stored code to a phase-looped locked (PLL) driving circuit connected to the transceiver through said multi-connector cord,

(4) a binary up/down counter connected to an input of the ROM for indexing the ROM through the operating frequencies,

(5) an up/down circuit, connected to one input of the binary up/down counter and operated by manually actuated up/down switches for manually selecting the desired preselected operating frequency, and

(6) a vacant channel selecting circuit and clock oscillator connected to another input of the binary up/down counter for automatically scanning and selecting a vacant operating frequency on which the transceiver might operate, and

(e) a channel number display means situated with its display surfaces exposed out of said housing and connected to the

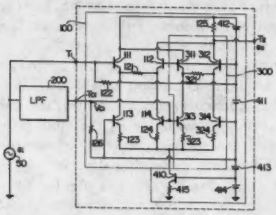
switching circuit of the frequency selecting means for displaying the channel number of the selected operating frequency.

4,198,602

LIMITER CIRCUIT FOR LIMITING PULSIVE NOISES

Hideo Nishijima; Isao Fukushima, both of Katsuta, and Hiroyuki Kimura, Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 21, 1978, Ser. No. 934,717
Claims priority, application Japan, Aug. 23, 1977, 52-100858
Int. Cl.[2] H04B 1/10
U.S. Cl. 455—307 **6 Claims**



1. A limiter circuit comprising:
an input terminal for receiving a modulation signal;
an output terminal from which an output signal is derived;
a first differential amplifier including first and second transistors having emitters thereof interconnected to each other through a resistor, a base of said first transistor being coupled to said input terminal;
a second differential amplifier including third and fourth transistors having emitters thereof interconnected to each other and collectors thereof connected in series with said emitters of said first and second transistors, respectively;
a constant current source connected to said commonly connected emitters of said third and fourth transistors for supplying a constant current to said first and second transistors of said first differential amplifier through said third and fourth transistors of said second differential amplifier;
load means connected to a collector of said second transistor to supply an output signal appearing at said collector of said second transistor to said output terminal;
bias source means including a first bias source for providing a first bias potential to bases of said first and second transistors and a second bias source for providing a second bias potential to bases of said third and fourth transistors;
a low-pass filter coupled to said input terminal to pass therethrough a modulation signal applied to said input terminal; and
circuit means for coupling an output from said low-pass filter to said bases of said third and fourth transistors and supplying to said bases of said third and fourth transistors the modulation signal which has passed through said low-pass filter.

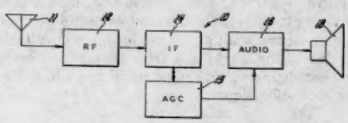
4,198,603

RADIO RECEIVER AUDIO ATTENUATOR

Frederick A. Aldridge, Russiaville; James T. Gotshall, and Burtron D. Schertz, both of Kokomo, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 22, 1978, Ser. No. 944,910
Int. Cl.[2] H04B 1/16
U.S. Cl. 455—234 **2 Claims**

1. In a radio receiver including means effective to receive a radio frequency signal over a predetermined range of varying signal strength, derive an intermediate frequency signal from said radio frequency signal, amplify said intermediate frequency signal, generate an AGC signal varying with received signal strength, regulate the amplified intermediate frequency signal in strength over the predetermined range of received signal strength in response to said AGC signal and derive an audio frequency signal from said regulated intermediate frequency signal, the improvement comprising:
means effective to attenuate the audio frequency signal by a predetermined constant attenuation;
means effective to linearly mix the audio frequency signal and attenuated audio frequency signal in controllable relative proportion to generate an output audio signal having an attenuation controllable between zero and the



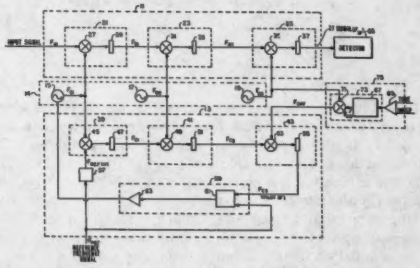
predetermined constant attenuation in response to an attenuation control signal; and
means effective to derive the attenuation control signal from the AGC signal and provide said attenuation signal to the linear mixing means in sense to vary the attenuation of the output audio signal inversely with received signal strength, whereby the output audio signal is attenuated smoothly, up to the limit of said predetermined constant attenuation, for increasingly weak and therefore noisy radio frequency signals, to render the resulting noisy output audio signals less objectionable.

4,198,604

HETERODYNE PHASE LOCK SYSTEM

Steven N. Holdaway, Santa Rosa, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 8, 1977, Ser. No. 804,828
Int. Cl.[2] H04B 1/26; H03D 1/16
U.S. Cl. 455—260 **16 Claims**



1. A system in a frequency tuned apparatus for cancelling noise in oscillating signals, enabling the frequency to which the apparatus is tuned to be determined independently of the frequencies of the oscillating signals, the system comprising:
input circuit means having a first plurality of cascaded heterodyne circuits for producing successive stage signals, the first circuit of the plurality being coupled to receive an applied input signal;
control circuit means having a phase detector means, and having a second plurality of cascaded heterodyne circuits for producing control signals, the first heterodyne circuit of this second plurality being coupled to receive harmonics of an applied reference signal, and the last heterodyne circuit of this second plurality being coupled for producing a last control signal;
signal producing means having a third plurality of signal producing circuits, at least one of which is frequency-controllable for producing a first oscillating signal, the third

plurality being equal to said first and second pluralities, with each signal producing circuit corresponding, in a one to one relationship, to each heterodyne circuit in the input circuit means and in the control circuit means, each signal producing circuit being coupled to a corresponding heterodyne circuit in the input circuit means and to a corresponding heterodyne circuit in the control circuit means for applying an oscillating signal to the corresponding heterodyne circuits, thereby to permit determination of the frequency to which the apparatus is tuned independent of the frequencies of the oscillating signals; and

the phase detector means being coupled to receive the last control signal and the reference signal for applying a phase lock signal to the frequency-controllable signal-producing circuit, causing the frequency-controllable signal-producing circuit to add frequency components to the first oscillating signal substantially cancelling the noise in the oscillating signals.

4,198,605

CHANNEL SELECTING APPARATUS IN A RECEIVER

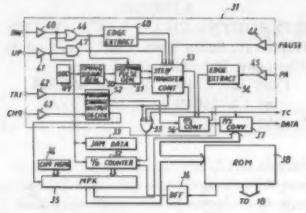
Norio Yamashita, and Toshiyuki Ozawa, both of Oora, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi and Tokyo Sanyo Electric Co., Ltd., Oora, both of, Japan

Filed Dec. 9, 1977, Ser. No. 859,265

Claims priority, application Japan, Dec. 16, 1976, 51-153015; Dec. 16, 1976, 51-153016; Dec. 16, 1976, 51-153017; Dec. 16, 1976, 51-153018; Dec. 16, 1976, 51-153019; Dec. 16, 1976, 51-153020

Int. Cl.[2] **H04B** *1/32*

U.S. Cl. 455—161 **28 Claims**



1. A channel selecting apparatus for a superheterodyne receiver, comprising means for receiving a high frequency signal having a plurality of channels, local oscillating means for providing an oscillation frequency signal the frequency of which is different by a given frequency difference from said received high frequency signal, and mixing means responsive to said received high frequency signal and said local oscillation frequency signal for providing an intermediate frequency signal, said local oscillating means comprising

voltage controlled oscillating means for providing an oscillation frequency signal the oscillation frequency of which is variable as a function of a given control voltage,

means for modifying the oscillation frequency of the output of said voltage controlled oscillating means,

first means for controlling the amount of frequency modification of said oscillation frequency modifying means to be determined for each of said plurality of channels, and

means responsive to the output from said oscillation frequency modifying means, as controlled by said first means for providing a control voltage associated with the frequency of the output of said oscillation frequency modifying means to said voltage controlled oscillating means, whereby said local oscillating means is adapted to provide a local oscillation frequency signal the frequency of which is associated with the frequency modification rate, as controlled by said first means, said channel selecting apparatus further comprising

upward scanning command means for commanding a scanning operation in the upward direction of said plurality of channels by said receiver,

downward scanning command means for commanding a scanning operation in the downward direction of said plurality of channels by said receiver,

said first means comprising

means coupled to said oscillation frequency modifying means and responsive to the output of said upward scanning command means or said downward scanning command means to be enabled to make a reversible variation of the amount of frequency modification in the upward or downward scanning direction, respectively, the amount of frequency modification corresponding to the next adjacent channel, whereby a scanning operation is effected by said receiver on a one-by-one channel basis responsive to the output of said upward or downward scanning command means, and

means responsive to the simultaneous outputs of both said upward scanning command means and said downward scanning command means for controlling said means for making reversible variation of the amount of frequency modification to make consecutive variations of the amounts of frequency modification in a given direction, whereby a scanning operation is effected by said receiver in a consecutive manner responsive to the simultaneous outputs of both said upward scanning command means and said downward scanning command means.

4,198,606

TUNING APPARATUS

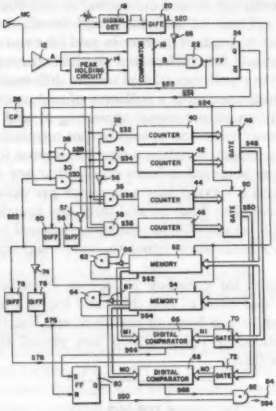
Michiru Baba, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 15, 1978, Ser. No. 915,758

Claims priority, application Japan, Jun. 21, 1977, 52-73642

Int. Cl.[2] **H03K** *9/06;* **G10G** *7/02*

U.S. Cl. 328—141 **4 Claims**



1. A tuning apparatus which comprises:

fundamental frequency detection means for detecting an objective signal to be tuned and generating a fundamental frequency pulse signal having a frequency corresponding to the fundamental frequency of said objective signal;

converter means for converting said fundamental frequency pulse signal to a first pulse signal having a pulse width corresponding to said fundamental frequency;

means for generating a second pulse signal having a pulse width corresponding to the frequency of a reference tone;

means for comparing the pulse width of said first and second pulse signals and generating a third pulse signal having a

pulse width corresponding to the difference therebetween;

means for generating cent value-corresponding pulses having a frequency so selected as to indicate a cent value with respect to said reference tone; and

means for counting said cent value-corresponding pulses in the period corresponding to the pulse width of said third pulse signal and generating a deviation signal expressing the deviation of frequency between said fundamental frequency pulse signal and said second pulse signal in terms of a cent value.

4,198,607

INPUT CIRCUIT FOR A MEASURING AMPLIFIER DEVICE

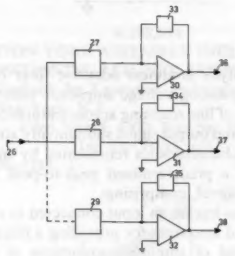
Karl Beinitz, Cologne, and Volker Kaltenbach, Bensberg, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH & Co. Kommanditgesellschaft, Cologne, Fed. Rep. of Germany

Filed May 25, 1978, Ser. No. 909,436

Claims priority, application Fed. Rep. of Germany, May 25, 1977, 2723609

Int. Cl.[2] **G06G** *7/12;* **G01R** *1/30*

U.S. Cl. 328—143 **6 Claims**



1. A circuit for measuring an input current comprising: a plurality of networks each comprising a diode, each defining a respective measuring range, and each connected to receive the input current so that such current is divided among said networks; a plurality of independent measuring channels each connected to receive the signal from a respective network and each providing an output signal representative of the amplitude of the input current on a respectively different amplitude scale; and a plurality of output terminals each connected to receive the output signal from a respective channel and to be electrically isolated from one another by said channels.

4,198,608

GLITCH DETECTOR AND TRAP

William Comley, Rancho Palos Verdes, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jul. 5, 1978, Ser. No. 921,961

Int. Cl.[2] **H03K** *13/32, 13/02, 5/18*

U.S. Cl. 328—162 **12 Claims**

1. A circuit for substantially removing the undesirable effects of a glitch caused by an error in at least one bit of a digital signal applied to a digital-to-analog converter, the analog signal in turn being utilized for controlling a machine, said circuit comprising:

a source of digital signals which may include an error in at least one bit;

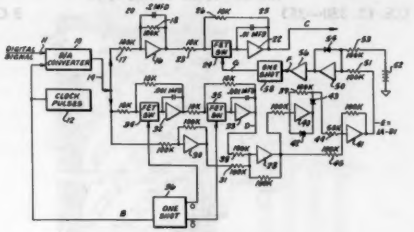
an analog-to-digital converter coupled to said source for impressing on said converter digital signals, said converter generating output pulses, each having a duration of one sample period;

a track and store amplifier coupled to said converter, said track and store amplifier including a switch, which when actuated will convert the track mode of said amplifier into the store mode;

means coupled to said converter for delaying the converter output signal by one sample period;

means for subtracting the output of said converter from the output of said means for delaying the converter output signal and coupled to said converter and to said means for delaying;

a full-wave rectifier coupled to the output of said means for subtracting;



means for clipping the signal developed by said full-wave rectifier and coupled thereto, said means for clipping having a predetermined trigger level to derive an output in response to a glitch; and

means coupled to said means for clipping for operating said switch in response to the output of said means for clipping, thereby to cause said track and store amplifier to revert into the store mode to thereby substantially eliminate the effects of a glitch.

4,198,609

PHASE TRACKED LOOP FREQUENCY DEMODULATOR

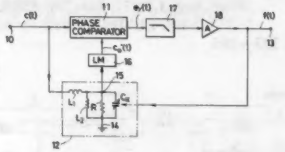
Yukinobu Ishigaki; Teruo Muraoka; Masaki Hagihara; Takeo Nasu, and Kunihiro Kato, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jul. 14, 1978, Ser. No. 924,554

Claims priority, application Japan, Jul. 15, 1977, 52-84891; Jul. 15, 1977, 52-84892; Aug. 24, 1977, 52-100626; Aug. 24, 1977, 52-100627

Int. Cl.[2] **H03D** *3/22*

U.S. Cl. 329—136 **7 Claims**



1. A phase tracked loop frequency demodulator comprising:

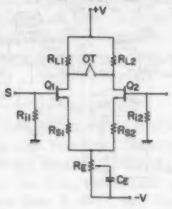
a first filter having a quadratic amplitude characteristic as a function of frequency with a resonant peak which occurs at one end of the frequency range thereof, including a variable reactance element responsive to a control signal applied thereto to effect shifting of the frequency of said resonant peak, said filter being receptive of a frequency modulated signal to cause same to undergo a phase shift of 90° at the frequency of said resonant peak;

a phase comparator for comparing in phase between said frequency modulated signal and said phase-shifted frequency modulated signal; and

a feedback circuit connected to the output of said phase comparator for generating said control signal including a second filter for eliminating the carrier frequency compo-

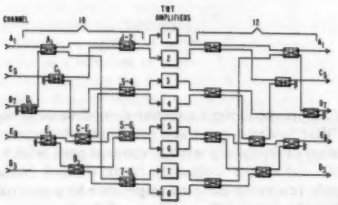
nents of the output signal from said phase comparator and an amplifier for amplification of the signal in the feedback circuit.

4,198,610
AUDIO AMPLIFIER
Kenkichi Tsukamoto, 47, Koyamashimofusa-Cho, Kita-Ku, Kyoto-Shi, Kyoto-Fu, Japan
Filed Mar. 6, 1978, Ser. No. 883,985
Claims priority, application Japan, Mar. 11, 1977, 52-25926
Int. Cl.[2] H03F *3/185, 3/45*
U.S. Cl. 330—253 **3 Claims**



2. In an audio amplifier circuit having an AC mode in which an audio frequency AC input signal is applied to a signal injection terminal of an amplifying element and having a DC mode in which said input signal is not so applied, said circuit being DC-biased to minimize output noise in its DC mode and having a middle point in its AC mode on each side of which the circuit impedance to ground is the same at the frequency of said input signal, so that the potential of said middle point with respect to ground is not changed by said input signal, the improvement wherein said middle point of said circuit coincides with a point in said amplifying element, the potential of which with respect to ground is equal to that of said signal injection terminal, whereby amplification by said amplifying element of noise generated therein upon application of said input signal to said signal injection terminal is minimized.

4,198,611
REDUNDANCY SYSTEM WITH EIGHT DEVICES FOR FIVE CHANNELS
Kai Yin Eng, Irvington, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Aug. 1, 1977, Ser. No. 820,934
Int. Cl.[2] H01P *1/10*
U.S. Cl. 333—105 **5 Claims**



1. A redundancy system for connecting various combinations of eight available devices **1** through **8** to five channels A_1 through E_9 comprising,

ten switches labeled A, B, C, D, E, C-E, **1-2**, **3-4**, **5-6** and **7-8**,

means including switches A, **1-2** and **7-8** connecting channel A_1 with device **1**, **2**, **7** or **8**,

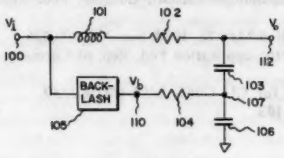
means including switches B, **5-6** and **7-8** connecting channel B_3 with device **5**, **6**, **7** or **8**,

means including switches C, C-E, **1-2**, **3-4** and **5-6** connecting channel C_5 with device **1**, **2**, **3** or **5**,

means including switches D, A, **1-2** and **3-4** connecting channel D_7 with device **1**, **2**, **3** or **4**, and

means including switches E, C-E, B, **3-4** and **5-6** connecting channel E_9 with device **3**, **4**, **5** or **6**.

4,198,612
IMAGE ANALYSIS NONLINEAR ADAPTIVE FILTER FOR IMPROVING SIGNAL-TO-NOISE RATIO
Roger R. A. Morton, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Continuation of Ser. No. 627,739, Oct. 31, 1975, abandoned.
This application Jan. 5, 1978, Ser. No. 868,169
Int. Cl.[2] H03H *7/10, 7/14*
U.S. Cl. 333—17 R **7 Claims**



1. An image analysis nonlinear adaptive filter receiving a video signal having analog voltage amplitude excursions generated as a function of line scanning across features of an image for providing a filtered output signal substantially attenuated of video signal noise characteristics represented by small amplitude excursions of a predetermined peak-to-peak amplitude value of the video signal, comprising:

filter circuit means having an input connected to receive the video signal and an output for providing a filtered output signal attenuated of amplitude excursions of the video signal which are less than a predetermined peak-to-peak amplitude value of the video signal at the input whenever the magnitude of the difference between the input and the output of the filtered circuit means is less than a predetermined value which is a function of the peak-to-peak amplitude value of the video signal noise characteristic to be attenuated; and

circuit control means having an input connected to receive the video signal and an output connected to pass a modified received signal to the output of said filter circuit means whenever the magnitude of the difference of the amplitude of the video signal at the input and the amplitude at the output of the filter circuit means exceeds the predetermined value which is a function of the predetermined peak-to-peak amplitude value of the video signal noise characteristics attenuated so that the filtered output signal which is substantially attenuated of video signal noise characteristics represented by small amplitude excursions of the predetermined peak-to-peak amplitude value of the video signal does not differ from the video signal by more than an amount related to the predetermined value.

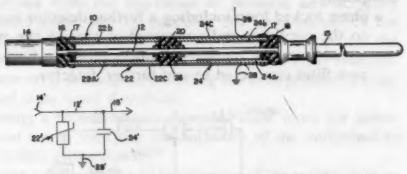
4,198,613
FILTER CONTACT
Thomas J. Whitley, Scarborough, Canada, assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed May 17, 1978, Ser. No. 906,730
Int. Cl.[2] H01H *7/14*
U.S. Cl. 333—181 **20 Claims**

18. An electrical contact, comprising:

conductor means having input and output portions for connection to respective signal carrying elements and having

a central portion comprising at least a portion of an electrical circuit path between said input and output portions;

electrical circuit element means comprising a plurality of circuit components disposed in tandem generally along said central portion and intermediate said input and output portions for substantially preventing transmission of predetermined electromagnetic interference signals from said input portion to said output portion; and



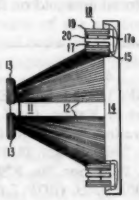
resilient conductive means comprising flexible conductive grommet members disposed between each of said plurality of tandem circuit components and adjacent said input and output portions of said conductor means, said input and output portions of said conductor means retaining said grommet members in resilient axial compression.

4,198,614

DEFLECTION YOKE ASSEMBLY INCLUDING A BEAM POSITIONING MAGNET ARRANGEMENT

Frank R. Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 6, 1978, Ser. No. 958,021
Int. Cl.[2] H01F *3/12*
U.S. Cl. 335—211 **9 Claims**



1. A deflection yoke assembly for a cathode ray tube including a permanent magnet arrangement disposed relative to the deflection coils of said yoke for modifying the deflection field affecting an electron beam passing through the yoke, said arrangement comprising:

first and second magnets each having opposite magnetic pole regions; and

a magnetic field shunt structure disposed relative to said magnets for causing said magnets to appear substantially as a single magnet having opposite magnetic pole regions, said structure including castellated members disposed adjacent to said magnets for linking the magnetic fields of said magnets.

4,198,615

FULL RANGE CURRENT LIMITING FUSE HAVING HIGH LOAD CURRENT CARRYING CAPACITY

William R. Mahieu, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Filed Feb. 6, 1978, Ser. No. 875,352
Int. Cl.[2] H01H *85/04, 85/12*
U.S. Cl. 337—162 **19 Claims**

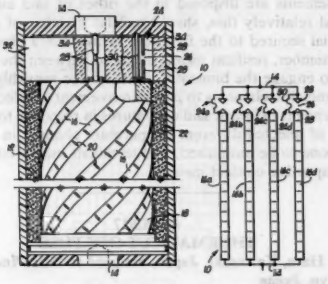
1. A full range current limiting device comprising:

a pair of spaced terminals adapted to be interposed in an electrical circuit;

a plurality of discrete current limiting elements electrically coupled in parallel between said terminals to define a conductive path therebetween,

said current limiting elements being operable collectively to interrupt relatively high current flow through said path exceeding a first predetermined current level and

means for establishing an arc gap in series with each of said elements when a relatively low current flow, in an inclusive range between said first current level and a second current level less than said first level, is conducted through said path,



said gaps operating to direct the full low current flow between said terminals to individual elements sequentially whereby the latter are successively actuated to interrupt said low current flow,

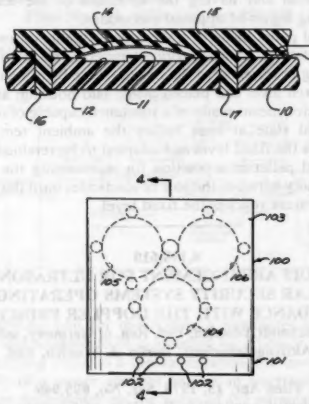
said gap-establishing means comprising a normally closed shiftable contact set for each element and means for opening said contact sets in unison in response to currents within said range.

4,198,616

BIMETALLIC THERMOSTATS WITH SEVERAL RESPONSE TEMPERATURES

Giangrazio DeFilippis, Naples, Italy, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 21, 1978, Ser. No. 879,327
Int. Cl.[2] H01H *37/52*
U.S. Cl. 337—371 **3 Claims**



1. A compact, low cost multitemperature thermostatic switch device comprising a first relatively thin, sheet-like base member of a dielectric material having a plurality of at least

three pairs of contact means fixedly disposed thereon in a generally common plane, a plurality of bimetallic elements of original dish-shaped curvatures which are each adapted to reverse their curvature when heated to respective different response temperatures, said bimetallic elements being disposed on the first base member generally is said common plane so that the elements engage and span respective pairs of the contact means to electrically connect the contacts of the respective pairs when the elements are disposed in one of said curvatures and so that the elements disengage and open connection between said respective pairs of contact means when the elements are disposed in the other of said curvatures, a second relatively thin, sheet-like base member of a dielectric material secured to the first base member in a plane over the first member, resilient means disposed between the base members to engage the bimetallic elements for movably mounting the bimetallic elements to permit movement of selected ones of the elements between said curvatures in response to the occurrence of selected different temperature changes in a temperature zone to be monitored, and terminals means connected to the respective contact means.

4,198,617

THERMAL CUT-OFF FUSE

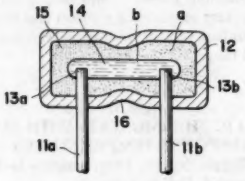
Kunio Hara, Kawasaki, Japan, assignor to Nifco Incorporated, Tokyo, Japan

Filed Sep. 6, 1978, Ser. No. 939,971

Claims priority, application Japan, Sep. 12, 1977, 52/108917

Int. Cl.[2] H01H *37/76*

U.S. Cl. 337—403 **8 Claims**



1. A thermal cut-off fuse, comprising in combination:

a housing having a pair of lead wires withdrawn outwardly therefrom and having the terminals of the lead wires forming a pair of opposed electrodes;

a thermal pellet made of a substance capable of assuming a solid state at normal service temperatures and faithfully melting in response to the rise of the ambient temperature to a fixed level and placed inside said housing; and

a conductor means made of a substance capable of assuming a liquid state at least before the ambient temperature reaches the fixed level and adapted to be retained by said thermal pellet in a position for maintaining the electric continuity between the pair of electrodes until the ambient temperature reaches the fixed level.

4,198,618

CIRCUIT ARRANGEMENT FOR ULTRASONIC BURGLAR SECURITY SYSTEMS OPERATING IN ACCORDANCE WITH THE DOPPLER PRINCIPLE

Peter Kleinschmidt, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 13, 1978, Ser. No. 895,949

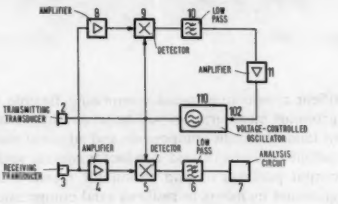
Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722982

Int. Cl.[2] G01S *9/66*

U.S. Cl. 367—94 **3 Claims**

1. In a circuit arrangement for an ultrasonic burglar alarm system of the type which operates in accordance with the Doppler principle and which comprises a transmitting transducer which is fed an a.c. voltage from an oscillator for continuously transmitting ultrasonic radiation, a receiving transducer for producing a received signal in response to reflected radiation and a receiving circuit including an analysis circuit, a low pass filter and a phase detector which compares the received signal with the a.c. oscillator voltage and forms a detection signal which is dependent on the mutual phase angle and which is fed to the analysis circuit, the improvement therein comprising:

a phase locked loop including a further detector connected to the oscillator and connected to receive the received signal from the receiving transducer and a further low-pass filter connected to said further detector,



and wherein the oscillator is a voltage-controlled oscillator connected to and having its frequency controlled by the output of said further low-pass filter, said further low-pass filter including means defining a cut-off frequency such that the only signals which pass, fundamentally without reduction, are those signals having frequencies less than $F_c = c/E$, where c is the speed of the ultrasonic radiation and E is the distance from the transmitting transducer to a reflective object located in the predetermined maximum range of the monitored area and on further to the receiving transducer.

4,198,619

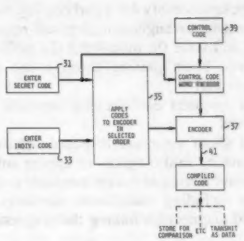
PROGRAMMABLE SECURITY SYSTEM AND METHOD

Martin M. Atalla, Portola Valley, Calif., assignor to Atalla Technovations Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 736,436, Oct. 28, 1976. This application Feb. 21, 1978, Ser. No. 879,784

Int. Cl.[2] G05B *1/03*; G07F *7/02, 7/10*

U.S. Cl. 340—149 A **2 Claims**



1. The method of operating a personal verification system including encoding means having an input for receiving a control code input representative of the location, and a code word input means coupled to the encoding means and operable for verifying the authority of an individual to complete transactions on the basis of the combination of an individual code word which is peculiar to the individual, a secret code word which need only be known to the individual, a control code representative of the location, and a compiled code word which is derived from the other of the code words, the method comprising the steps, performed in selected sequence, of:

preparing a logical encoding status at the location in accor-

dance with a selected logical combination of the control code for the location, the individual code word and a secret code word received from the individual prior to verification of his authority to complete a transaction;

encoding the combination of the control code for the location, the individual code word and the secret code word received from the individual by logically combining the control code for the location and the secret code word received from the individual to produce an encrypted control code, and by encoding the combination of the encrypted control code, the individual code word and the secret code word received from the individual in accordance with said logical encoding status to produce a compiled code word therefrom;

preparing a record of said compiled code word for subsequent use in verifying the authority of the individual to complete a transaction;

applying to the code word input means of the system both an individual code word for identifying the individual attempting to complete a transaction and a secret code word from such individual;

preparing a logical encoding status in the encoding means of the system in accordance with said logical combination of the control code for the location, the individual code word and secret code word applied to the code word input means of the system;

encoding the combination of the control code for the location, the individual code word and the secret code word applied to the code word input means by logically combining the control code for the location and the secret code word received from the individual to produce an encrypted control code, and by encoding the combination of the encrypted control code, the individual code word and the secret code word received from the individual in accordance with said logical encoding status prepared in the encoding means of the system to produce a corresponding compiled code word therefrom;

comparing said corresponding compiled code word with the compiled code word from said record for the authorized individual having such individual code word; and

controlling completion of the transaction in response to the comparison of the compiled code word from said record with said corresponding compiled code word produced from the control code for the location, the applied individual code word and secret code word received from the individual attempting to complete the transaction.

4,198,620

REMOTE CONTROL RECEIVER

Alfred Vogt, Salz; Bernd Veith, Bad Neustadt, and Anton Rüttiger, Oberbach, all of Fed. Rep. of Germany, assignors to Preh, Elektrofeinmechanische Werke, Jakob Preh Nachf GmbH & Co., Fed. Rep. of Germany

Filed Aug. 17, 1978, Ser. No. 934,617

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738414

Int. Cl.[2] **H04Q** *9/12*

U.S. Cl. 340—171 PF **17 Claims**

1. Apparatus for receiving remote control signals having an alternating sequence of two chronologically successive frequency pulses, the first said pulse having a first predetermined frequency and the second said pulse having a second frequency manually selected from a predetermined number of frequencies, each of said predetermined number of frequencies representing a respective command to be carried out, the apparatus comprising:

means for detecting said remote control signal;

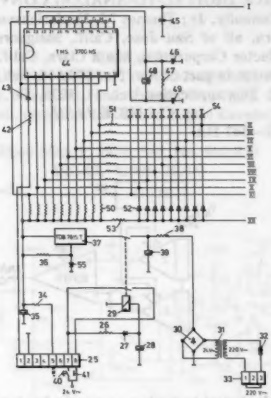
means coupled to the output of said detecting means for selectively amplifying said remote control signal;

means coupled to the output of said amplifying means for decoding said remote control signal into a group signal dependent on said first frequency and a command signal dependent on said second frequency;

controllable means for gating said command signal from said decoding means to command-signal registering means;

means for registering the command signal from said decoding means, said registering means having a command-signal input and a command-signal output for each of the predetermined number of commands and a blocking input for each command-signal output;

means coupled to each said command-signal output for implementing the corresponding command;



circuit means responsive to said group signal and coupled for controlling said gate means to allow passage of said command signal to said command-signal registering means; and

circuit means responsive to receipt of a command signal at one of said command-signal inputs for locking the remaining command-signal inputs by supplying a signal to the corresponding blocking inputs.

4,198,621

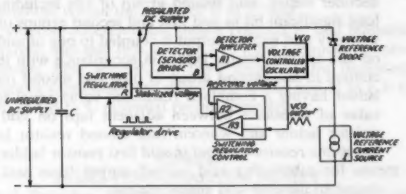
ELECTRICAL REMOTE SENSING SYSTEM

Graham B. Roper, Newbury, England, assignor to Crowcon (Instruments) Limited, England

Filed Nov. 14, 1977, Ser. No. 850,945

Int. Cl.[2] **G08C** *19/16*

U.S. Cl. 340—210 **7 Claims**



1. A sensing unit for monitoring a parameter at a remote location and adapted to be connected by a power supply and signal carrying cable to a central location, the unit consisting essentially of a sensor element having an electrical condition varying in dependence on the value of the parameter,

means connected to the sensor element for converting the condition of the sensor element to a variable frequency signal representative of a variable parameter at the remote location, and

a switched mode voltage regulator arranged to operate at a switching frequency, connected to the power and signal carrying cable and to the converting means and arranged

to provide a stable fixed voltage power source forming part of the sensing unit, wherein the switching frequency of the switched mode voltage regulator is identical to and continuously varying in dependence on the variable frequency signal representative of the value of the parameter, while the regulator maintains the voltage applied to the converting means at a fixed value.

4,198,622

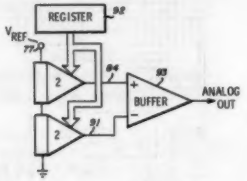
DOUBLE DIGITAL-TO-ANALOG CONVERTER

Joseph J. Connolly, Jr.; Thomas M. Fredericksen, and Thomas P. Redfern, all of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 879,646, Feb. 21, 1978, abandoned. This application Dec. 11, 1978, Ser. No. 968,329

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 DA **10 Claims**



1. A double digital to analog converter having input terminals for receiving a source of reference potential and for receiving signals representing the bits of a digital word and an analog output for providing an analog potential representative of said digital word, said converter comprising:

a first section coupled to said reference input terminals comprising a first tapped resistor ladder and first decoder means coupled to said taps on said first resistor ladder to provide a first output, means for supplying a first group of bits from said digital word to said first decoder means, said first group of bits including the most significant bit in said word, whereby said first output is coupled, via said first decoder, to one of said taps on said first resistor divider in accordance with the bit content of said first group of bits;

a second section comprising a second tapped resistor ladder coupled in series with said first resistor ladder and second decoder means coupled to said taps on said second resistor ladder to provide a second output, means for supplying a second group of bits from said digital word to said second decoder means, said second group of bits including the least significant bit in said first and second groups of bits, whereby said second output is coupled to one of said taps on said second resistor ladder in accordance with the bit content in said second group of bits, said second resistor ladder having a combined resistance value equal to the value of resistance between adjacent taps on said first resistor ladder and wherein said second resistor ladder forms one resistor element in said first resistor ladder; and

means for subtracting said second output from said first output to develop said analog output.

4,198,623

TOUCH ENTRY INTERACTIVE CATHODE RAY TUBE ARRANGEMENT

Victor A. Misek, Hudson, N.H.; Albin A. Hastbacka, Chelmsford, Mass.; Robert J. Beairsto, Pembroke, and Alphonse J. Trasatti, Amherst, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 13, 1978, Ser. No. 960,142

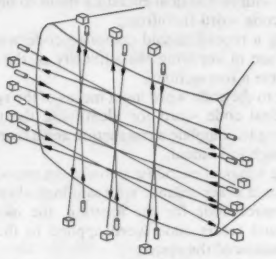
Int. Cl.[2] G08C *21/00*

U.S. Cl. 340—365 P **7 Claims**

1. Interactive video display apparatus functioning with a video display having a non-planar display area and with associated equipment which generates signals for a display on said display area comprising:

a plurality of energy sources located along the edge of the display area of said video display and energized to send beams of energy proximate to at least a portion of said display area;

a plurality of detectors located along the edge of the display area but being spaced further therefrom than said plurality of energy sources, each of said detectors receiving at least one energy beam and providing an indication upon the received energy beams being interrupted and wherein an



object touching the video display interrupts more than two energy beams at least one of which is close to the surface of said display at the point touched;

means responsive to the interrupted beam indication from ones of said detectors for providing identity signals indicating which energy beams are interrupted; and

means for processing said identity signals to choose the interrupted energy beams closest to the surface of said display area at the point touched, the identity signals of the chosen interrupted beams defining the coordinates of the video display point being touched.

4,198,624

ALARM SYSTEM

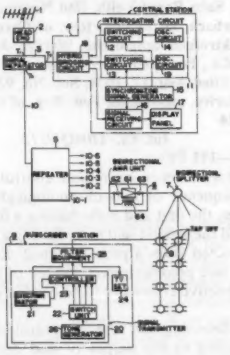
Masakatsu Watanabe, Tokyo, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed Apr. 28, 1978, Ser. No. 901,311

Claims priority, application Japan, May 2, 1977, 52-51074

Int. Cl.[2] G08B *26/00*

U.S. Cl. 340—505 **8 Claims**



1. In an alarm system utilizing a bidirectional CATV system for remotely monitoring a plurality of subscribers of said CATV system from a central station connected to said CATV system, the improvement comprising:

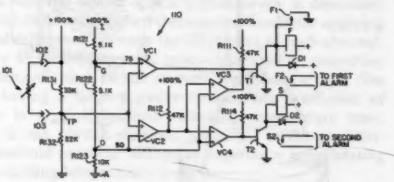
(a) a plurality of subscribers stations each located at each subscriber's location and having locations in group units;
(b) a plurality of tone generators each provided in the corresponding one of said subscriber stations, said tone generators generating up-signals of first frequencies common to respective of said group units, said first frequencies being different for respective subscribers in respective group units;
(c) means disposed in said central station for sequentially generating a plurality of first signal components of different frequency components respectively corresponding to a plurality of types of alarm contents, said plurality of first signal components being periodically generated repeatedly, the frequencies of said first signal components being different from said first frequencies of said up-signals;
(d) means disposed in said central station for generating a plurality of second signal components of different frequency components respectively corresponding to said plurality of group units, said plurality of second signal components being periodically generated repeatedly, the frequencies of said second signal components being different from the first frequencies of said up-signals and the frequencies of said first signal components;
(e) synchronizing means disposed in said central station for controlling the duration time of each signal component and the repetition period of said first and second signal components in such a manner that one cycle of repetition of one of said first and second signal components is completed within the duration time of each signal component of the other of said first and second signal components;
(f) means for delivering said first and second signal components as interrogating signals from said central station to a transmission cable of said CATV system;
(g) repeater means disposed in said transmission cable and including means for branching and transmitting the first signal components in said interrogating signals to each of said group units;
(h) a plurality of alarm switch means disposed in each of said subscriber stations and connected to said tone generator therein, whereby when an abnormal condition occurs in the location of each said subscriber station, one of said alarm switch means corresponding to the said abnormal condition is actuated;
(i) discriminating means disposed in each said subscriber station for receiving, separating and detecting the respective frequency components of said first signal components;
(j) controlling means disposed in each said subscriber station whereby in response to the detection outputs of said discriminating means, operation and non-operation of said alarm switch means are sequentially polled so as to sequentially control the delivery of the outputs of said tone generator to said transmission cable through said alarm switch means as said up-signals;
(k) means disposed in said repeater means for receiving said second signal components and separating the same into the respective frequency components to generate a plurality of detection signals;
(l) means disposed in said repeater means for separately receiving said up-signals from said group units, whereby in response to said detection signals corresonding to the frequency components of said second signal components, said up-signals from said group units are sequentially transmitted group by group to said central station through said transmission cable in synchronism with the period of said second signal components;
(m) means disposed in said central station for receiving said up-signals through said transmission cable to separate the same into said first frequencies and generate a plurality of detection outputs;
(n) a plurality of AND gate means disposed in said central station for receiving in a matrix manner at the inputs thereof a plurality of first binary codes each having a signal content indicative of the presence or absence of corresponding one of said plurality of first signal components, a plurality of second binary code signals each having a signal content indicative of the presence or absence of corresponding one of said plurality of second signal components, and a plurality of third binary code signals each having a signal content indicative of the presence or absence of corresponding one of said plurality of detection outputs; and
(o) a plurality of indicator means disposed in said central station, each of said indicator means being operable by an output of corresponding one of said plurality of AND gate means.

4,198,625

DUAL ALARM DETECTION ON SINGLE LOOP

Irving Mande, Westport, and Robert W. Right, Huntington, both of Conn., assignors to General Signal Corporation, Stamford, Conn.

Filed May 2, 1978, Ser. No. 902,030
Int. Cl.[2] G08B *29/00*
U.S. Cl. 340—517 **18 Claims**



1. An alarm differentiating circuit comprising in combination:
(a) a potential source having lower and upper potential limits identified herein as A and I, respectively, and intermediate potentials from B to H increasing in magnitude, with respect to A, in alphabetic sequence;
(b) first circuit means bridged across said potential source for clamping first and second terminals at potentials D and G, respectively;
(c) second circuit means responsive to a non-alarm indicating condition for maintaining a third terminal at a potential within the range of H to I;
(d) said second circuit means responsive to a first class of alarm indication for switching said third terminal to a potential within the range of E to F;
(e) said second circuit means responsive to a second class of alarm indication for switching said third terminal to a potential within the range of B to C; and
(f) potential differentiating means coupled to said potential source, and said first, second and third terminals for producing first, second and third unique alarm indicating signals when said third terminal is within said H to I; E to F; and B to C potential range, respectively.

4,198,626

INTRAVENOUS ALARM DEVICE

Frank J. Rauscher, 4908 Mt. View Ave., San Bernardino, Calif. 92407

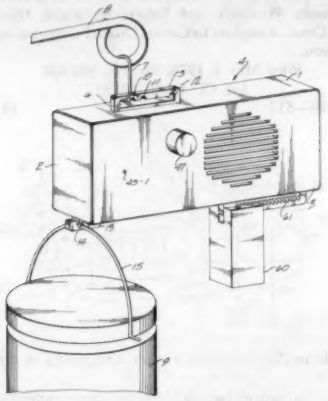
Filed Sep. 2, 1977, Ser. No. 830,093
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—613 **5 Claims**

1. An intravenous alarm device for providing an alarm signal to indicate that a predetermined amount of liquid remains in a liquid dispensing container of the type adapted to be suspended from an arm, the intravenous alarm device comprising:
attitude-sensitive transducing means including a mercury switch that defines a reference axis and that has two contacts between which mercury makes electrical connection while the reference axis is within a predetermined tolerance angle relative to horizontal, and including cir-

cuit means controlled by the mercury switch for producing such an alarm signal while the mercury makes electrical connection between the contacts;

a structure including a casing and support means for supporting the attitude-sensitive transducing means; the support means including a board for supporting the mercury switch, and adjustable means for presetting the orientation of the board relative to the casing to provide tolerance compensation such that the alarm is produced only while the angle between the reference axis and horizontal is less than the tolerance angle;

the casing having at a first point thereof a hanger portion to provide for suspending the device from such an arm,



having at a second point thereof a holding portion from which such a liquid dispensing container can be suspended, and having defined at a third point thereof a device center of gravity;

the hanger portion defining an axis of revolution perpendicular to said reference axis; and the first, second, and third points being spaced relative to each other to define vertices of a triangle such that the structure, while being suspended from such an arm and having suspended from it such a liquid dispensing container that is dispensing liquid, orients the reference axis at a time-varying angle relative to the horizontal with the instantaneous magnitude of the time-varying angle being dependent upon the weight of the liquid remaining in the suspended liquid container.

4,198,627

PHOTOELECTRIC SYNCHRONOUS SMOKE SENSOR

Takao Kakigi, Kanagawa, Japan, assignor to Cybernet Electronics Corporation, Kanagawa, Japan

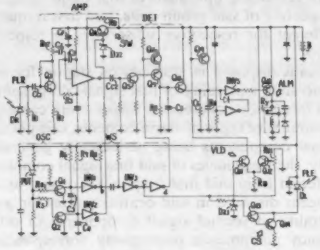
Filed Jun. 29, 1978, Ser. No. 920,636

Claims priority, application Japan, Jul. 12, 1977, 52-92462[U]; Jul. 18, 1977, 52-95560[U]

Int. Cl.[2] **G08B** *17/10*

U.S. Cl. 340—630 **2 Claims**

1. A photoelectric synchronous smoke sensor comprising: a pulse generator generating pulses of a wide pulse width and pulses of a narrow pulse width in a predetermined duty cycle; a light-receiving pulse receiver and an amplifier, each brought into the operative state by said pulses of a wide pulse width; a pulse light-emitter and a power source voltage limit detector, each brought into the operative state by said pulses of a narrow pulse width; a synchronism detector receiving a signal from said amplifier as its input in a time width corresponding to that



of said pulses of a narrow pulse width; and an alarm actuated by a signal from said synchronism detector.

4,198,628

CIRCUIT ARRANGEMENT FOR DETECTING GROUNDS IN A STATIC CONVERTER

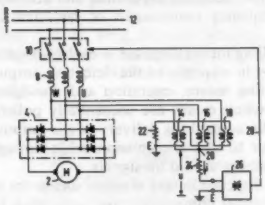
Hans Laber, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 23, 1978, Ser. No. 889,523

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1977, 2716605

Int. Cl.[2] **G08B** *21/00*

U.S. Cl. 340—650 **13 Claims**



1. In an apparatus including a circuit arrangement for use in detecting unintentional grounds in a static converter having three a-c leads, the circuit arrangement including: three electrical components each including first and second leads, the first leads of said three components being connected to said three a-c leads, respectively, and the second leads of said three components being connected together to form an artificial neutral point; current-measuring circuit means connected between said neutral point and earth ground for generating an alarm signal in the event of an unintentional ground in said converter; the improvement comprising:

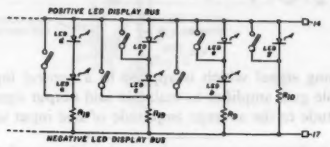
three voltages transformers each having a primary winding, said primary windings of said three voltage transformers forming said three electrical components;

and a current limiting resistor connected between said neutral point and earth ground and in series with said current measuring circuit means.

4,198,629
NUMERICAL DISPLAY USING PLURAL LIGHT SOURCES AND HAVING A REDUCED AND SUBSTANTIALLY CONSTANT CURRENT REQUIREMENT

Roland M. Marion, LaFayette, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Jun. 6, 1977, Ser. No. 803,574
Int. Cl.[2] G09F 9/32
U.S. Cl. 340—761 8 Claims



1. The combination comprising:

(1) a controllable numerical display site containing a plurality of light emitting diodes at positions "a" to "g" respectively, on a vertically elongated parallelogram with a central horizontal bar, said positions being identified as follows:

(2) a diode energization and control network comprising:

A. polarized first and second input terminals for connection to a source of unidirectional potential, and

B. a plurality of mutually parallel energization and control branches connected between said input terminals, and each including a current stabilizing means, one or more forward poled diodes, and one or more switches each returned to said second input terminal,

(a) said first branch including:

(1) a first current stabilizing means and diodes in said positions a and d connected respectively between said first and said second input terminals, and

(2) a first switch shunting said diodes in positions a and d, whereby a diode in position d is never on without a diode on in position a,

(b) said second branch including:

(1) a second current stabilizing means and diodes in said positions c and f connected respectively between said first and said second input terminals, and

(2) two switches: one, a second switch shunting said diodes in positions c and f, and the other, a third switch, shunting said diode in position f, whereby a diode in position f is never on without a diode on in position c,

(c) said third branch including:

(1) a third current stabilizing means and a diode in said position b connected respectively between said first and said second input terminals, and

(2) a fourth switch shunting said diode in position b, and

(d) said fourth branch including:

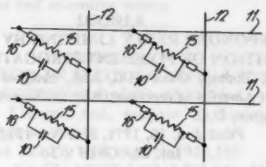
(1) a fourth current stabilizing means and a diode in position g connected respectively between said first and said second input terminals, and

(2) a fifth switch shunting said diode in position g.

4,198,630
DISPLAYS USING THICK FILM SWITCHES TO CONTROL INDIVIDUAL DISPLAY ELEMENTS

Nur M. Serinken, and David R. Baraff, both of Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 9, 1978, Ser. No. 932,125
Int. Cl.[2] G06F 3/14
U.S. Cl. 340—784 5 Claims

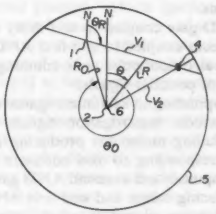


1. A display cell comprising a plurality of display elements, each display element defined by a pair of spaced electrodes flanking a material whose optical transmissivity is dependent on potential difference applied thereacross, means for applying a potential difference between the electrodes of each element, a plurality of switch elements series-connected to respective display elements, each switch element comprising a thick film material having a large negative temperature coefficient of resistance in a predetermined switching temperature zone, wherein, in use, switch elements subjected to the predetermined threshold potential difference experience joule heating to said switching temperature zone.

4,198,631
APPARATUS FOR DISPLAYING VHF-DIRECTION FINDER DATA ON A RADAR PPI

James C. Rennie; Philip M. Thompson, and Vernon I. Davies, all of Ottawa, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Oct. 23, 1978, Ser. No. 953,935
Int. Cl.[2] G01S 9/02; H01J 29/78
U.S. Cl. 343—5 EM 4 Claims



1. Apparatus for generating a train of pulse signals in real time for coupling to a Plan Position Indicator radar display video bright-up circuit for forming a line on the display at a bearing θ_R and passing through a point having the coordinates $R_o\angle\theta_o$ with respect to the center of the plan position indicator rotating radial scan, the radial scan operating at a radar trigger pulse repetition frequency F and rotating at a frequency f to subtend an angle $\Delta\theta = 360° \times f/F$ per scan; said apparatus comprising:

first counter means for storing a pulse count representative of $R_o \sin(\theta_R - \theta_o)$;

second counter means coupled to the first counter means and enabled at the pulse repetition frequency F to receive the pulse count from the counter means, said second counter means providing an output pulse signal for the video bright-up circuit after stepping through the pulse count; and

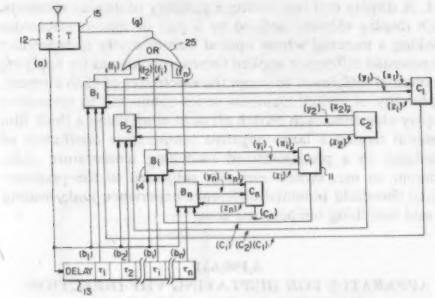
binary rate arithmetic multiplier means having a first input for receiving clock pulses at a frequency $f_c >> F$ and a second input for receiving a digital binary signal which is a function of the radar pointing angle θ of the radial scan, the multiplier means multiplying the clock pulses of frequency f_c by the digital binary signal to provide a series of timed output pulses to the second counter means for stepping the second counter means through the pulse count.

4,198,632

TRANSPONDER REPLY LIMITING BY MEANS OF RECOGNITION OF FIXED INTERROGATION PERIODS

Walton B. Bishop, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 10, 1971, Ser. No. 151,973
Int. Cl.[2] G01S 9/56
U.S. Cl. 343—6.8 LC **2 Claims**



1. In a transponder receiving IFF interrogation signals, apparatus for supplying an adequate number of responses to each IFF interrogator having a fixed interrogation frequency comprising:

means for recognizing periodic signals of an interrogator including,

delay means,

a first AND gate coupled to said delay means,

counter means coupled to said first AND gate adapted to produce an output pulse upon counting a predetermined number of periodic signals;

means for responding to said interrogator upon the deletion of said periodic interrogation signals, said responding means including means for producing a pulse having a length corresponding to said adequate number of transponder responses and a second AND gate coupled to said pulse producing means and said first AND gate; and,

means for inhibiting responses to said interrogator after an adequate number of replies have been given to said interrogator.

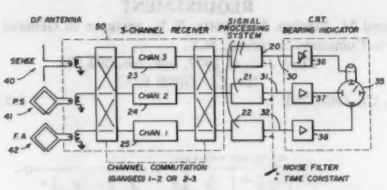
4,198,633

ELECTRONIC SIGNAL PROCESSING SYSTEM

Zdzislaw A. A. Krajewski, Ajax, Canada, assignor to Bayly Engineering Limited, Ajax, Canada

Filed Apr. 7, 1978, Ser. No. 894,506
Int. Cl.[2] G01S 3/30
U.S. Cl. 343—119 **7 Claims**

1. An electronic signal processing system for an alternating voltage input signal comprising a phase-locked loop network having an input adapted to receive said signal and produce an intermediate signal comprising a substantially noise free sine wave with a phase equal to the average phase of said input signal, said intermediate signal being applied to an input of a variable gain amplifier which, for any particular value of gain, produces an output signal proportional to said intermediate signal, and an amplitude averaging loop network having said input signal and said output signal as its inputs which produces



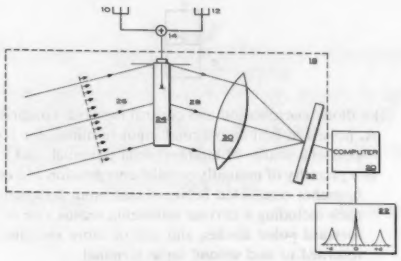
a biasing signal which is applied to a control input of said variable gain amplifier to maintain said output signal equal in amplitude to the average amplitude of said input signal.

4,198,634

OPTICAL AUTOCORRELATOR SIGNAL PROCESSOR

James L. Jernigan, Inyokern, and Thomas F. O'Neill, Jr., China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1971, Ser. No. 185,418
Int. Cl.[2] G01S 3/48
U.S. Cl. 343—100 CL **6 Claims**



1. A direction finder for measuring the arrival direction of detected radiation, and, thereby, the direction to the radiation source, comprising:

a plurality of radiation receiving means, each of which is for receiving said radiation and converting said radiation into an electrical signal;

means coupled to said plurality of receiving means for summing said electrical signals and providing an output of the sum;

signal processing means coupled to said output of said summing and providing means for correlating said electrical signals; and

display means coupled to said processing means for indicating the arrival direction of said detected radiation.

4,198,635

ORIENTATION SYSTEM

Harold A. Gell, Jr., 13720 Lockdale Rd., Silver Spring, Md. 20906

Filed Dec. 28, 1977, Ser. No. 865,140
Int. Cl.[2] G01S 5/02
U.S. Cl. 343—112 PT **42 Claims**

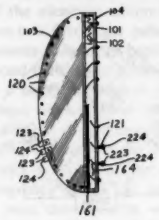
1. A relative azimuth indication system, comprising:

an indicator, including:

an image area optically responsive to an electric field, a first electrode assembly adjacent to the viewing side of said indicator, a second electrode assembly adjacent to the rear

side of said indicator, said first and second electrode assemblies adapted to generate an electric field at selected points therebetween and through said indicator image area;

a first contact assembly including a plurality of electrical



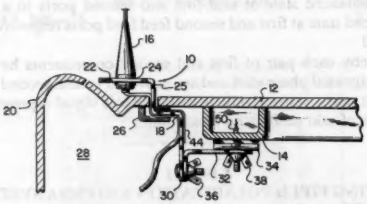
brushes for coupling electrical potentials to said first electrode assembly; a second contact assembly for coupling electrical potentials to said second electrode assembly; and means to rotate said indicator including said first and second electrode assemblies relative to at least one of said contact assemblies.

4,198,636

ANTENNA MOUNTING BRACKET FOR AUTOMOBILE TRUNK LID

Robert W. Canterbury, 6442 S. Point Dr., Dallas, Tex. 75248, and Jimmy J. Johnston, Rte. 1, Doris Dr., Renner, Tex. 75074

Filed Apr. 19, 1976, Ser. No. 678,183
Int. Cl.² H01Q *1/32*
U.S. Cl. 343—715 **4 Claims**



1. Apparatus for the generally vertical mounting of an antenna on a trunk lid of an automobile and for the repositioning and securing of the antenna in a generally horizontal, concealed configuration within the trunk storage space therein, said apparatus comprising:

frame means having first and second opposed ends and an intermediate body portion therebetween;

said first frame end including a generally planar flange region having an aperture formed therethrough for receiving the antenna therein and secured mounting thereto in an upstanding relationship therefrom;

said second frame end including mounting means for securing said frame to an underneath portion of the trunk lid and supporting said antenna therefrom;

said body portion comprising an angled strut complementally configured to pass between the trunk lid and the region of the automobile adjacent thereto; and

means interposed between said body portion and said second frame end mounting means for providing orthogonal pivotability between said body portion and said mounting means and allowing the antenna to be repositioned from a generally vertically upstanding orientation outside the automobile to a generally horizontal position adjacent the underneath side of the automobile trunk lid, said means including,

a right angle bracket having first and second portions formed orthogonal to one another;

said first orthogonal portion including a generally planar region having an aperture formed therethrough and adapted for abutting a generally planar portion of said frame body portion; and

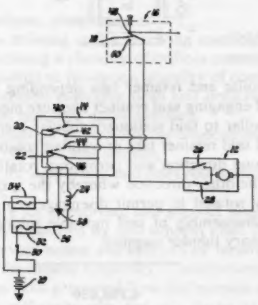
said second orthogonal portion including a generally planar region having an aperture formed therethrough and adapted for abutting a generally planar portion of said second frame end mounting means.

4,198,637

CONTROL FOR AN ELECTRIC MOTOR-DRIVEN TELESCOPING RADIO ANTENNA

Roger D. Sand, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 17, 1978, Ser. No. 925,210
Int. Cl.² H01Q *1/32, 1/10*
U.S. Cl. 343—715 **1 Claim**



1. Electric control for an electric motor driven radio antenna for use in a vehicle having a selectively actuatable mechanism for protecting the vehicle from unauthorized entry, said control comprising electric motor control means for directing electric power to the electric motor to move said antenna to an extended or retracted position, vehicle ignition switch means and a radio control switch means in electrical series relation for conditioning said electric motor control means to energize said electric motor to extend said antenna only when both switch means are conditioned to be electrically conductive; and retraction switch means automatically operable by said selectively actuatable mechanism to energize said electric motor, through said electric motor control means, to retract said antenna only when said selectively actuatable mechanism is operated to protect the vehicle and either or both of said vehicle ignition switch means or said radio control switch means are conditioned to be electrically nonconductive.

4,198,638

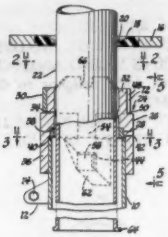
TELESCOPING ANTENNA MAST CONNECTOR

David T. Carolus, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 1, 1978, Ser. No. 938,990
Int. Cl.² H01Q *1/32, 1/10*
U.S. Cl. 343—715 **2 Claims**

1. In a motor vehicle wherein an antenna is extensible and retractable through an opening in a vehicle body member, a telescoping radio antenna and connector assembly, comprising; a stationary tubular member having retainer aperture means adjacent one end thereof and being secured to the vehicle body member below the opening therein; a movable tubular member telescopically disposed in said stationary tubular member; and connector means for limiting the linear movement of said movable tubular member in one direction, for guiding said movable tubular member and for permitting re-

moval of said movable tubular member from said stationary tubular member comprising, an annular collar surrounding one end of said stationary tubular member, a stop ring means disposed in said annular collar for engaging a portion of said movable tubular member after a predetermined amount of linear movement thereof, a bearing surface formed on the inner surface of said annular collar contacting and guiding said movable tubular member during linear movement thereof, and a retainer having a spring collar engaging a portion of said



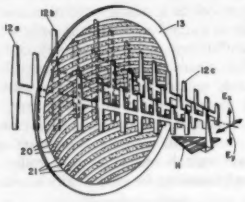
annular collar and retainer tabs depending from said spring collar and engaging said retainer aperture means to secure said annular collar to said stationary tubular member, said spring collar and said retainer tabs preventing rotation of said spring collar in one direction and permitting rotation of the spring collar in the other direction whereby the spring collar can be selectively rotated to permit disengagement of said retainer tabs and disassembly of said movable tubular member from said stationary tubular member.

4,198,639

PARABOLIC AND LOG PERIODIC ANTENNAS COMBINED FOR COMPACT HIGH-GAIN BROADBAND ANTENNA SYSTEM

Derling G. Killion, San Diego, Calif., assignor to Cubic Corporation, San Diego, Calif.

Filed Dec. 26, 1978, Ser. No. 972,721
Int. Cl.[2] H01Q *21/00, 1/28*
U.S. Cl. 343—727 **10 Claims**



1. A compact antenna system for enclosure within a radome of predetermined size comprising;

a non-conductive parabolic dish;

first linear radiating means rigidly positioned in front of said dish for generating electric fields in a relatively high frequency band that are linearly polarized in one direction;

second linear radiating means extending through said dish and having radiating elements on either side thereof for generating electric fields in a relatively low frequency band that are linearly polarized perpendicular to said one direction; and

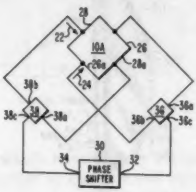
polarization selective means on said dish for reflecting said electric fields that are linearly polarized in said one direction, and for passing said electric fields that are linearly polarized perpendicular to said one direction with substantially no reflection.

4,198,640

REFLECTARRAY ANTENNA

David F. Bowman, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 22, 1978, Ser. No. 917,889
Int. Cl.[2] H01Q *3/26*
U.S. Cl. 343—754 **12 Claims**



1. A reflectarray antenna that includes a primary feed for radiating a wave having a selected one of a plurality of polarization states, said wave being absorbed by a plurality of radiators, the improvement comprising:

each radiator positioned to absorb a portion of said wave; and

a plurality of reciprocal transmission phase shifters each associated with a different one of said radiators, each such phase shifter having first and second portions connected to a first feed port and a second feed port, respectively of the radiator with which it is associated, each received wave portion being resolved into a pair of components comprising first and second mutually orthogonal components at the first and second feed ports, respectively, of each radiator; and means for increasing the bandwith of said radiator by transforming said wave portions from an unbalanced state at said first and second ports to a balanced state at first and second feed feed ports respectively; and

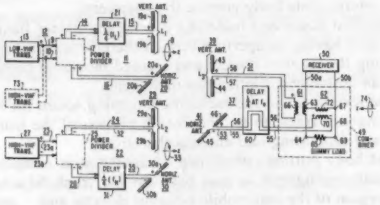
whereby each pair of first and second components have a designated phase shift and are provided to said second and first ports, respectively, in response to a signal representation of said designated phase shift.

4,198,641

ROTATING FIELD POLARIZATION ANTENNA SYSTEM

John J. Gibson, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 14, 1977, Ser. No. 768,592
Claims priority, application United Kingdom, Aug. 9, 1976, 33117/76
Int. Cl.[2] H01Q *21/26*
U.S. Cl. 343—797 **7 Claims**



1. A system for communicating signals over two separate frequency bands where the one frequency band contains a frequency approximately three times a frequency in the other frequency band using a common receiving antenna system, comprising:

means for radiating said one frequency band signal waves in a first rotational directional sense over a given area,

means for radiating said other frequency band signal waves in a rotational directional sense opposite said first sense, said receiving antenna system located in the common coverage area and directed in the general direction of both of the transmitting antennas comprising a pair of antenna elements each adapted to receive linearly polarized waves with a first of the elements adapted to receive linearly polarized waves in a first linear polarization and the second of the elements adapted to receive linearly polarized waves in a second orthogonal polarization, and

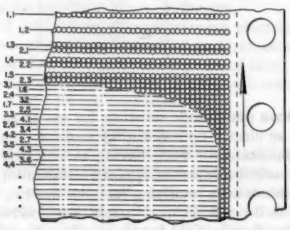
means including a delay coupled to said first and second receiving antenna elements for combining said signal waves received at one of said receiving antenna elements with signal waves received at the other of said receiving antenna elements delayed an extra one-quarter wavelength at a frequency within the other lower frequency band and an extra three-quarter wavelengths at a frequency within said one frequency band.

4,198,642

INK JET PRINTER HAVING INTERLACED PRINT SCHEME

Rodger L. Gamblin, Oakwood, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 9, 1978, Ser. No. 867,669
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **7 Claims**



1. An ink jet printer for printing an image on an intermittently moving print web, comprising:

print head means for generating a number of ink jet drop streams directed at said web, each of which streams providing for printing along an associated print line on said web, with the spacing in the direction of web movement between adjacent drop streams being an integer multiple of the width of a print line, said integer multiple of the width of a print line having no prime factors greater than unity in common with the number of jet streams generated by said print head means,

means for moving the print web intermittently past the print head means by a distance equal to the product of the width of a print line times the number of jet streams generated by said print head means, and

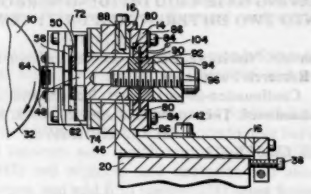
means for moving said print head means transversely across the print web after each intermittent movement of said print web, such that a number of print lines across the print web are serviced and uninterrupted printing may be accomplished along the length of the print web.

4,198,643

JET DROP PRINTER WITH ELEMENTS BALANCED ABOUT SUPPORT PLATE IN NODAL PLANE

Charles L. Cha, Xenia; George W. Denlinger, Stringboro; David N. Pipkorn, Centerville, and Elias Spyrou, Dayton, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Dec. 18, 1978, Ser. No. 970,473
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **10 Claims**



4. A jet drop printer, comprising:

reservoir means defining an ink receiving manifold,

orifice means defining a plurality of orifices communicating with said manifold to produce a plurality of continuously flowing ink streams emerging from said orifices as ink is applied to said manifold under pressure,

drop control means for controlling the trajectories of drops which break off from said streams,

a support plate for supporting said reservoir means and said orifice means,

support structure for supporting said support plate,

vibrating means supported by said support plate for vibrating said reservoir means and said orifice means at a frequency near the natural frequency of said streams, thereby causing drops to be generated from said streams which are substantially uniform in size, and

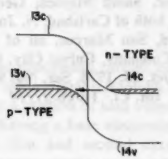
a reaction mass supported by said support plate and positioned relative to said vibrating means, said reservoir means, and said orifice means such that a vibrational nodal plane passes through said support plate, thereby mechanically decoupling said support structure from the vibrations impressed upon the other elements of said printer.

4,198,644

TUNNEL DIODE

Leo Esaki, Chappaqua, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 9, 1978, Ser. No. 914,103
Int. Cl.[2] H01L *29/88, 29/161*
U.S. Cl. 357—12 **5 Claims**



1. A tunnel diode comprising: first and second layers of different semiconductor materials; the top of the valance band for the material of said first layer being at an energy between the energy of the bottom of the conduction band and the top of the valance band for the material of said second layer; the bottom of the conduction band for the material of said first layer being at an energy greater than the energy of the bottom of the conduction band for the material of said second layer; said first layer being degenerately doped with an excess of

acceptors to the extent that the Fermi level lies in the valance band; said second layer being degenerately doped with an excess of donors to the extent that the Fermi level lies in the conduction band; and said first and second layers being interfaced to form a semiconductor heterojunction.

4,198,645

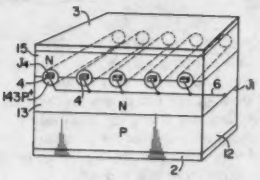
SEMICONDUCTOR CONTROLLED RECTIFIER HAVING GATE GRID DIVIDING SURROUNDING ZONE INTO TWO DIFFERENT IMPURITY CONCENTRATION SECTIONS

Jun-ichi Nishizawa, Sendai, Japan, assignor to Semiconductor Research Foundation, Japan

Continuation-in-part of Ser. No. 652,896, Jan. 27, 1976, abandoned. This application Apr. 27, 1978, Ser. No. 900,591

Int. Cl.[2] **H01L** *29/80*

U.S. Cl. 357—22 **25 Claims**



1. A semiconductor controlled rectifier comprising:

a first semiconductor region of one conductivity type;

a second semiconductor region of the other conductivity type disposed adjacent to said first semiconductor region to form a PN junction between said first and second semiconductor regions;

a third semiconductor region of the said conductivity type as said second semiconductor region and formed in said first semiconductor region to divide said first semiconductor region into a first outer and a first inner section, said third semiconductor region having a smaller thickness than that of said first inner region and comprising a first plurality of stripe-shaped sub-regions, and said first outer and first inner sections having respective different impurity concentrations which are lower than that of said third semiconductor region;

a first electrode region formed on said first outer region; and

a second electrode region formed on said second semiconductor region.

4,198,646

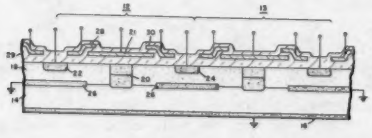
MONOLITHIC IMAGER FOR NEAR-IR

David H. Alexander, Santa Monica; George H. Hershman; Michael D. Jack, both of Carlsbad; N. John Koda, Vista, and Randahl B. Lloyd, San Marcos, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 13, 1978, Ser. No. 951,221

Int. Cl.[2] **H01L** *27/14*

U.S. Cl. 357—30 **4 Claims**



1. Apparatus for detecting the presence of near-IR radiation and producing a signal responsive thereto comprising:

(a) an intrinsic substrate of a first conductivity type, said substrate having a backside for receiving radiation and an oppositely disposed top surface;

(b) an epitaxial layer of said first conductivity type formed adjacent the top surface of said substrate, said layer containing means for collecting charge carriers and an output diffusion of a second conductivity type;

(c) a readout layer of insulative material formed adjacent said epitaxial layer, said readout layer containing means for transferring the charge carriers collected within said epitaxial layer to said output diffusion; and

(d) said readout layer additionally having means for imposing a bias so that said intrinsic substrate is depleted of substantially all of the charge carriers generated by near-IR radiation received at the backside thereof, whereby substantially all of said carriers will be collected in said epitaxial layer and transferred to the output diffusion thereof.

4,198,647

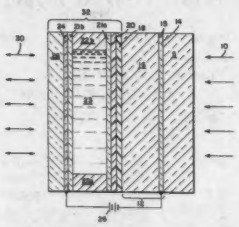
HIGH RESOLUTION CONTINUOUSLY DISTRIBUTED SILICON PHOTODIODE SUBSTRATE

Jan Grinberg, Los Angeles; Alexander D. Jacobson, Topanga; William P. Bleha, Jr., Carlsbad, and Paul O. Braatz, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 792,842, May 2, 1977, abandoned. This application Jan. 17, 1979, Ser. No. 4,107

Int. Cl.[2] **H01L** *27/14*

U.S. Cl. 357—30 **15 Claims**



1. A silicon photodiode substrate for use as an image input means for an electro-optical display medium comprising:

(a) a semiconductor body having therein first and second semiconductor layers of opposite conductivity type forming a continuous rectifying junction therein;

(b) means for establishing in said semiconductor body a uniform electric field by reverse biasing said rectifying junction wherein the value of said electric field and the thickness of said first and second semiconductor layers and the conductivities of said first and second layers are selected to deplete said first and second semiconductor layers of substantially all charge carriers so that optically generated charge carriers move through said depletion region under the influence of said electric field with a minimum of lateral spread; and

(c) an electro-optical display medium formed adjacent said semiconductor body to receive said optically generated charge carriers from said semiconductor body.

4,198,648

INTEGRATED SEMICONDUCTOR DEVICE

Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Filed May 4, 1978, Ser. No. 902,965

Claims priority, application Japan, May 15, 1977, 52/55778

Int. Cl.[2] **H01L** *27/02*

U.S. Cl. 357—43 **25 Claims**

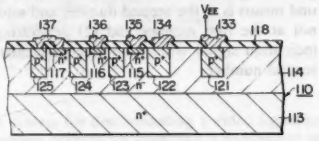
1. An integrated semiconductor device comprising:

a first and a second static induction transistor and a third

transistor, all of which being formed in a single common semiconductor body,

said first transistor including: a first semiconductor layer; a source having a first conductivity type and provided in said first semiconductor layer; a drain having said first conductivity type and provided in said first semiconductor layer; a current channel having said first conductivity type and provided in said first semiconductor layer between said drain and said source; and a gate having a second conductivity type opposite to said first conductivity type and provided adjacent to said current channel to define a boundary of said current channel, said first transistor serving as a driver transistor,

said second transistor including: a second semiconductor layer; a source having said first conductivity type and provided in said second semiconductor layer; a drain having said first conductivity type and provided in said



second semiconductor layer; a current channel having said first conductivity type and provided in said second semiconductor layer between this drain and this source; and a gate having second conductivity type and located adjacent to this current channel to define a boundary of this current channel, said second transistor serving as a bypath transistor for excess gate current of said first transistor,

said third transistor including: a current injecting region and a current extracting region, both having said second conductivity type, said current extracting region being electrically connected to said gate of said first transistor and also connected to the gate and the drain of said second transistor for injecting a current thereto,

said gate of said second transistor being electrically connected to both said drain of said second transistor and said gate of said first transistor, said sources of these two transistors being electrically connected to each other.

4,198,649

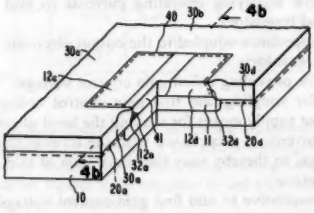
MEMORY CELL STRUCTURE UTILIZING CONDUCTIVE BURIED REGIONS

Robert Berry, Cupertino, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Division of Ser. No. 720,467, Sep. 3, 1976, Pat. No. 4,118,728. This application Jul. 3, 1978, Ser. No. 921,375

Int. Cl.[2] **H01L** *27/04*

U.S. Cl. 357—50 **12 Claims**



1. Structure comprising a pocket of semiconductor material separated from adjacent pockets of semiconductor material by insulation, characterized in that:

said insulation **(115)** extends through said semiconductor material to a laterally extending PN isolation junction formed in said semiconductor material, thereby to electrically isolate said pocket of semiconductor material;

a first region (beneath **124** and **125**) of a first conductivity type is formed in said pocket of semiconductor material;

a second region **(122)** of said first conductivity type is formed in said pocket of semiconductor material;

a third region **(120)** of said first conductivity type is formed in said pocket of semiconductor material;

a fourth region **(123)** of opposite conductivity type to said first conductivity type is formed in said pocket of semiconductor material between said first and said second region;

a fifth region **(121)** of opposite conductivity type is formed in said pocket of semiconductor material between said second region and said third region;

said fourth region **(123)** being formed in said pocket of said semiconductor material so as to leave a conductive buried region **(151)** between said fourth region **(123)** and said insulation **(115)** and adjacent said insulation and above said PN junction, and said fifth region **(121)** being formed in said pocket of said semiconductor material so as to leave a conductive buried region **(150)** between said fifth region **(121)** and said insulation **(115)** adjacent said insulation **(115)** and above said PN isolation junction, to electrically connect said first region (beneath **124** and **125**) and said second region **(122)**, and to electrically connect said second region **(122)** and said third region **(120)**;

a sixth region **(124)** of opposite conductivity type formed in said first region; and

means **(143, 141, 140)** for making electrical contact to said sixth region, said second region and said third region.

4,198,650

CAPACITIVE-TYPE NONLINEAR EMPHASIS CIRCUIT

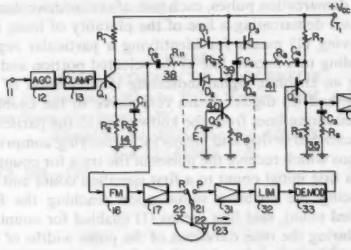
Masayuki Hongu, Komae; Takeshi Hamada, and Kazuo Yamagiwa, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 16, 1977, Ser. No. 825,170

Claims priority, application Japan, Aug. 25, 1976, 51-101286

Int. Cl.[2] **H04N** *5/76, 5/21;* **G11B** *5/02, 5/04*

U.S. Cl. 358—8 **19 Claims**



14. A video signal processing circuit comprising an input terminal to which a video signal is applied; emphasizing means to emphasize at least a portion of said video signal including a transistor amplifier having a base electrode connected to said input terminal and first and second current-carrying electrodes, circuit means connected in series with said first current-carrying electrode to modify the frequency response to said transistor amplifier, and a resistive load connected with said second current-carrying electrode; and control means to control the magnitude of the emphasized signal including a capacitor connected to said second current-carrying electrode and a non-linear impedance connected with said capacitor to form a series circuit which is in parallel with said resistive load, said non-linear impedance including a voltage source providing a relatively fixed voltage, a first diode coupled between said capacitor and said voltage source and biased to be normally

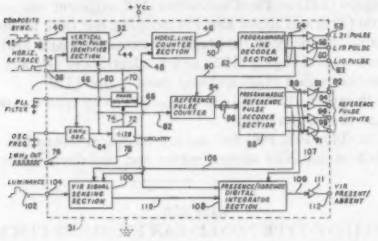
nonconductive except in response to excessive first signal excursions of one polarity, a constant current circuit, a voltage-drop resitor connected between said voltage source and said constant current circuit and defining a junction between the latter and the voltage-drop resistor, a second diode connected to said junction and polarized to be normally non-conductive except in response to excessive signal excursions of the opposite polarity to that of said first signal excursions, and an additional capacitor connected in parallel with said voltage-drop resistor and having a low impedance for said video signal.

4,198,651

TELEVISION REFERENCE SIGNAL DIGITAL INDENTIFICATION SYSTEM

Stephen Barton, Cupertino, and Brian Sadler, Sunnyvale, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Jun. 1, 1978, Ser. No. 911,721
Int. Cl.[2] H04N 9/535
U.S. Cl. 358—21 V **17 Claims**



1. An electronic system for identifying a particular line of a plurality of lines in a pulse train wherein: (1) the train includes a plurality of first pulses within a selected portion of the train and a plurality of second pulses outside the selected portion; (2) each first pulse has a greater pulse width than each second pulse; and (3) selected pulses of the first and second pulses constitute demarcation pulses, each pair of consecutive demarcation pulses demarcating a line of the plurality of lines; said system having (1) means for identifying a particular region corresponding to a known line in the selected portion and for generating an enabling signal indicating identification of the known line and (2) digital means responsive to the enabling signal for counting lines from the known line to the particular line; characterized in that said means for identifying comprises:

first means which receive the pulses of the train for counting from a first initial count to a first specified count and for producing the enabling signal upon reaching the first specified count, said first means (1) enabled for counting only during the time durations of the pulse widths of the pulses of the train when the pulses of the train are received by said first means, (2) reaching the first specified count during the total pulse width of a first number of first pulses, (3) not reaching the first specified count during the total pulse width of a second number of second pulses, and (4) periodically placed at the first initial count in response to first signals at a period which is equal to or greater than the maximum total time encompassed by the first number of first pulses and less than the minimum total time encompassed by the second number of second pulses; and

means for periodically generating the first signals.

12. In a television receiver and the like, a system for examining pulse fields to determine whether a particular information component is present on a particular line of a plurality of lines in each pulse field and for generating a presence indication signal when a presence indication criterion is met for the particular information component in a given plurality of pulse fields and for generating an absence indication signal when the presence indication criterion is not so met, said system comprising:

sensing means for examining each pulse field to determine whether the particular information component is present on the particular line and for generating a presence signal whenever said sensing means indicate the particular information component as present on the particular line; and

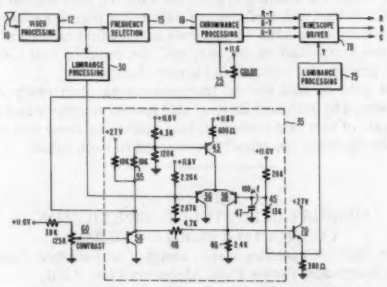
digital means comprising: (1) first means for counting each pulse field for which no presence signal is generated up to a first number of pulse fields for which no presence signals are generated, said first means being initialized in response to a presence signal and; (2) second means for counting each presence signal up to a second number of presence signals, said second means being initialized whenever said first means is at the first number; said digital means (1) generating the presence indication signal when said second means is at the second number and said first means is not at the first number and (2) generating the absence indication signal when said second means is not at the second number.

4,198,652

D.C. GAIN CONTROLLED AMPLIFIER

Robert P. Parker, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 11, 1978, Ser. No. 904,779
Int. Cl.[2] H04N 9/535
U.S. Cl. 358—27 **13 Claims**



1. A balanced, linearly gain controlled amplifier comprising:

first and second amplifier transistor with input, output and interconnected common electrodes;

means for supplying operating currents to said first and second transistors;

a load impedance coupled to the output electrode of one of said transistors;

means for providing a first gain control voltage;

means for coupling said first gain control voltage to said current supply means for varying the level of said operating currents in accordance with the level of said control voltage, to thereby vary the signal gain of said amplifier transistors;

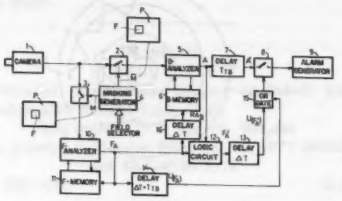
means responsive to said first gain control voltage for supplying an auxiliary current to said load impedance subject to variations of a sense opposite to the sense of operating current variations caused by said control voltage; and

feedback means direct current coupled between the output and input electrodes of said one transistor, for rendering said input electrode of said one transistor responsive to the quiescent voltage across said load impedance.

4,198,653
VIDEO ALARM SYSTEMS

Gerhard R. Kamin, Traisa, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 3, 1978, Ser. No. 892,787
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1977, 2715083
Int. Cl.[2] H04H 7/18
U.S. Cl. 358—105 7 Claims

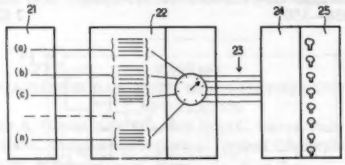


1. In an alarm system for discriminating a video signal produced by a television camera for detecting a movement or a change in a scene which is under surveillance by the television camera, the alarm system comprising means for subdividing the television picture corresponding to the video signal into a plurality of areas, and evaluation means for individually evaluating the respective video signals corresponding to those areas according to predetermined criteria, the improvement comprising means for detecting a video signal change originating from a predetermined brightness change in a selected picture area of adjustable size and position, and means for suppressing any alarm initiated in respect of at least one remaining area of the television picture when said predetermined brightness change is detected.

4,198,654
SYSTEMS FOR THE DISPLAY AND INDICATION OF INFORMATION

Pierre Coulomb, Fontenay sous/Bois, France, assignor to Societe Francaise d'Equipements pour la Navigation Aerienne, Velizy-Villacoublay, France

Continuation-in-part of Ser. No. 706,016, Jul. 16, 1976. This application Nov. 28, 1977, Ser. No. 855,315
Claims priority, application France, Nov. 29, 1976, 76 35971; Apr. 1, 1977, 77 09997
Int. Cl.[2] H04N 7/18
U.S. Cl. 358—109 6 Claims



1. A system for displaying and indicating information on an aircraft windshield to the pilot of the aircraft, comprising:

(a) converter means for transforming analog or numeric information signals to be supplied to the pilot into corresponding optical signals;

(b) means for selecting at least one of said analog or numeric signals for display, whereby different analog or numeric signals are capable of being displayed;

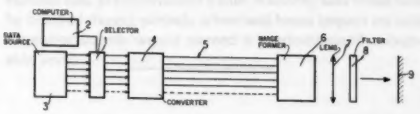
(c) projecting means for projecting the optical signals onto the windshield of the aircraft; and

(d) transfer means for transmitting the optical signals from said converter means to said projecting means and including a plurality of bundles of optical fibers, wherein the optical fibers at the receiving and transmitting ends of the bundle of fibers are arranged parallel to each other, and the emitting ends of the optical fibers are formed into geometric shapes allowing juxtaposition, a discrete light source for each bundle, and addressing means for selectively controlling the lighting of each light source in accordance with address commands received by said addressing means.

4,198,655
SYSTEMS FOR THE DISPLAY AND INDICATION OF INFORMATION

Pierre Coulomb, Fontenay sous Bois, France, assignor to Societe Francaise d'Equipements pour la Navigation Aerienne, Velizy-Villacoublay, France

Filed Jul. 16, 1976, Ser. No. 706,016
Claims priority, application France, Feb. 18, 1975, 75 22604; Feb. 17, 1976, 76 04355
Int. Cl.[2] H04N 7/18
U.S. Cl. 358—109 3 Claims



1. A system for the projection on the windshield of a vehicle images representative of information, this system comprising:

a converter means for transforming said information into luminous digital signals transmitted by a succession of discrete luminous sources;

a series of bundles of optic fibers in which the end receivers of each one of the bundles can be illuminated by a corresponding luminous source;

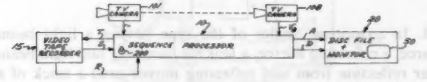
an image-forming means representative of said information, comprising an arrangement of end transmitters of the bundles of optic fibers; and

a lens collimated to infinity for projecting said image on the windshield of the vehicle.

4,198,656
VIDEO SEQUENCER-PROCESSOR

William D. Mathisen, Rancho Palos Verdes, Calif., assignor to Pelco Sales, Gardena, Calif.

Filed Oct. 24, 1975, Ser. No. 625,598
Int. Cl.[2] H04N 5/76
U.S. Cl. 358—127 8 Claims



1. A system for commutating and decommutating a frame by frame sequence of a plurality of surveillance television cameras, comprising:

sequencing means connected to said television cameras for sequentially selecting ones thereof for recording;

coding means connected to said sequencing means for developing serial code groups in corresponding relationship with the selection of said cameras, said serial code groups each having an individual code combination for each said camera;

superimposition means connected to said sequencing and coding means for interposing the individual code combination for each camera within the vertical interval of each field received from said cameras;

recording means connected to said superimposition means to serially record the signals in said fields from said cameras with said combinations interposed therein in a single recording channel, said recording means including a recorder that controls the rate of recording said signals and also is connected to said sequencing means to advance sequential selection of said cameras at the same rate, thereby achieving recordation of said signals for time lapse video signal storage;

playback means selectively connected to said recording means for selecting individual ones of said camera output signals according to a predetermined one of said individual code combinations that are interposed in the vertical intervals of fields stored in said recording means;

video display means connected to said playback means for producing a visual image corresponding to said selected camera signals; and

storage means connected to said playback and display means for storing said selected camera signal and cyclically repeating said signal to said display means.

4,198,657

OPTICAL DISK READER WITH MEANS FOR CORRECTING ERRORS DUE TO ECCENTRICITY AND TIME AXIS VARIATIONS

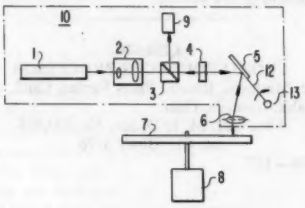
Hitoshi Kanamaru, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 6, 1976, Ser. No. 703,021

Claims priority, application Japan, Jul. 7, 1975, 50-83320; Jul. 7, 1975, 50-83321

Int. Cl.[2] **H04N** *5/76;* **G11B** *7/00, 17/00*

U.S. Cl. 358—128.5 **3 Claims**



1. In an optical reader of the type having a light beam source, a reflecting mirror, a lens for focussing said light beam after reflection from said reflecting mirror onto a track of a rotating disk, an electrooptical detecting means for detecting said light beam after reflection from said track and passing back through said lens and being re-reflected by said mirror, and feedback means responsive to the output of said electrooptical detecting means for altering the position of the reflecting surface of said mirror to shift the point of incidence of said beam on said disk to cause said beam to follow an information track on said disk, the improvement characterized by:

said mirror being connected to a pivot arm having a pivot point (n, m), other than the focal point of said lens, about which said arm is rotatable, said feedback means controlling the rotation of said pivot arm about said pivot point such that the substantial center of said beam of light always passes through the focal point on the image side of said lens.

4,198,658

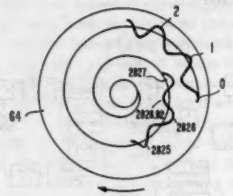
RECORDING/PLAYBACK APPARATUS FACILITATING TRACK SKIP DETECTION

Richard C. Palmer, Blawenburg, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 22, 1978, Ser. No. 908,516

Int. Cl.[2] **H04N** *5/76;* **G11B** *3/38*

U.S. Cl. 358—128.6 **9 Claims**



1. A system for recording signals on a disc master comprising:

(A) means for providing a picture signal including synchronizing components;

(B) a turntable for rotatably supporting a disc master;

(C) means for driving said turntable at a speed such that an integral number of synchronizing components occur per turntable revolution;

(D) means for generating a fixed-frequency pilot signal having a non-integral number of pilot signal cycles per turntable revolution;

(E) means for forming a recording signal inclusive of information from said picture signal providing means and said pilot signal generating means; and

(F) means for impressing said recording signal on said disc master along a smoothly progressing spiral track disposed on the surface thereof such that a fixed integral number of synchronizing components and a fixed non-integral number of pilot signal cycles occupy each convolution of said spiral track.

4,198,659

VERTICAL SYNCHRONIZING SIGNAL DETECTOR FOR TELEVISION VIDEO SIGNAL RECEPTION

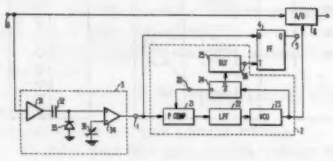
Hiroshi Iijima, and Yasushi Sano, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1977, Ser. No. 845,745

Claims priority, application Japan, Oct. 27, 1976, 51-129009

Int. Cl.[2] **H04N** *5/06, 5/04, 5/08;* **H03B** *3/04*

U.S. Cl. 358—150 **2 Claims**



1. A detector for detecting television video vertical sync signals and generating a final vertical sync pulse comprising in combination:

a separating circuit having an input connected to a source of television video vertical sync signals for separating a composite sync signal from said television video signal and having an output, said composite sync signal including horizontal sync pulses, equalizing pulses and vertical sync pulses which are based upon the horizontal synchronization;

a phase controlled oscillator having an input connected to

said separating circuit output and having an output, for generating timing pulses in each of first and second regions of said period where none of the levels of the horizontal sync pulses, equalizing and vertical sync pulses are changed; and

a sampling circuit having a first input connected to said separating circuit output and a second input connected to said phase controlled oscillator output containing said timing pulses, for sampling said composite sync signal with said timing pulses and generating the final vertical sync pulse.

4,198,660

SUPPLY CIRCUIT

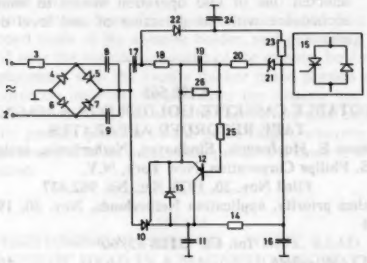
Flavio Ferracini, Turin, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Italy

Filed Jul. 14, 1978, Ser. No. 924,686

Claims priority, application Italy, Jul. 18, 1977, 68656 A/77

Int. Cl.[2] H04N 3/18

U.S. Cl. 358—190 **16 Claims**



1. A D.C. supply circuit for a television receiver which has a load circuit, the supply circuit comprising rectifying means for rectifying an alternating mains supply, a smoothing circuit connected between the rectifying means and the load circuit of the television receiver, and delay means for delaying the application of the maximum voltage from the supply circuit to the load circuit when the receiver is initially turned on even if the receiver has just previously been turned on and then off, and said delay means comprising inhibiting means for inhibiting at least a portion of a certain number of cycles of the voltage from the supply circuit from being applied to said smoothing circuit so as to provide a D.C. voltage in which the number of cycles having portions inhibited from reaching the smoothing circuit determines the length of delay period provided before the said D.C. voltage reaches its maximum value at the load circuit.

4,198,661

CATHODE RAY TUBE BURN-IN PREVENTION APPARATUS

Ronald A. Gatten, San Jose, and John C. Neves, Palo Alto, both of Calif., assignors to American Optical Corporation, Southbridge, Mass.

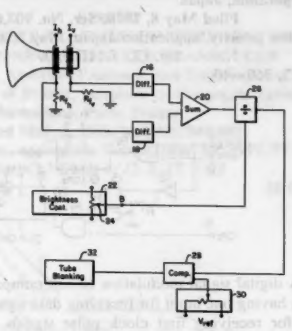
Filed Feb. 1, 1979, Ser. No. 8,320

Int. Cl.[2] H04N 5/68

U.S. Cl. 358—242 **4 Claims**

1. In an electronic instrument having a cathode ray tube display device in which an electron beam is directed to a screen having a phosphor, means for scanning said beam in a raster pattern on said screen, means for blanking said beam during a portion of said raster pattern and means for adjusting the brightness of said beam on said screen, the improvement comprising:

means for detecting the scan rate of said beam, means for monitoring the brightness of said beam, means for measuring the relative value of the relationship of the detected scan rate of said beam and the monitored brightness of said beam means for comparing the said relative value to a predetermined limit, and means for generating a blanking signal to said blanking means when said relative value



exceeds said predetermined value, whereby said beam will be blanked during periods when said beam impact on said phosphor screen would exceed a predetermined acceptable level.

4,198,662

METHOD OF RECORDING AND PLAYING BACK VIDEO SIGNALS ON MAGNETIC TAPE

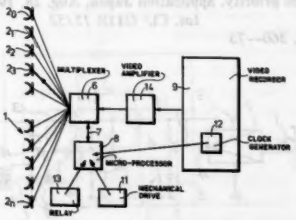
Heinrich-Christian Schopper, Krefeld, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 19, 1977, Ser. No. 862,089

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658574

Int. Cl.[2] H04N 5/78

U.S. Cl. 360—33 **20 Claims**



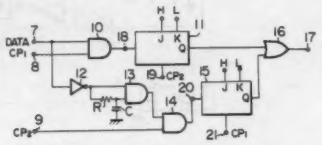
1. A video tape recorder comprising a stationary multi-track magnetic head having a row of head gaps, drive means for moving a magnetic tape past the head in a direction which is periodically reversed, and means for allocating the gaps to the lines of a half-frame successively during forward tape travel, to record or reproduce the half-frame by gap-wise scanning the lines of the half-frame in the form of very narrow, short, non-overlapping stepwise parallel tracks, and for shifting the track sequence by at least one gap during each reversal and the gaps missing at the end of the track sequence being made up cyclically of the corresponding number of gaps at the other end of the row of head gaps.

4,198,663

DIGITAL SIGNAL RECORDING SYSTEM

Yasumasa Sugihara, Kawasaki, Japan, assignor to The General Corporation, Japan

Filed May 8, 1978, Ser. No. 903,695
Claims priority, application Japan, May 7, 1977, 52-52354
Int. Cl.[2] G11B *5/09*
U.S. Cl. 360—40 **2 Claims**



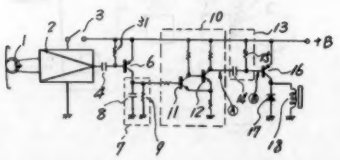
1. A digital signal modulation circuit comprising: an AND circuit having one input for receiving data signals and another input for receiving first clock pulse signals, a J-K flipflop circuit having its clock terminal connected to receive the output of said AND circuit and having a clear terminal connected to receive second clock pulse signals which are phase displaced 180° from said first clock pulse signals, a NOT circuit having an input for receiving the data signals, a gate pulse forming circuit connected to the output of said NOT circuit to receive therefrom inverted data signals and responsive to only the rising end of the inverted data signals for producing time-delayed gate pulse signals which are delayed by a time interval less than the period of the clock pulse signals, another AND circuit having one input connected to receive the time-delayed gate pulse signals and another input for receiving the second clock pulse signals, another J-K flipflop circuit having its clock terminal connected to the output of said another AND circuit and having its clear terminal connected to receive the first clock pulse signals, and an OR circuit connected to receive the output signals from both said J-K flipflop circuits.

4,198,664

NONRECORDED SECTION DETECTION IN A TAPE RECORDER APPARATUS

Tatsuhiro Yasunaga, and Masaru Fujii, both of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 717,925, Aug. 26, 1976, abandoned. This application Mar. 30, 1978, Ser. No. 891,642
Claims priority, application Japan, Aug. 28, 1975, 50-1739
Int. Cl.[2] G11B *15/52*
U.S. Cl. 360—73 **20 Claims**



1. A nonrecorded section detection system for detecting a nonrecorded section provided between two adjacent programs recorded on a magnetic tape in a tape recorder apparatus,

said nonrecorded section detection system comprising:

a power supply source;

reproduction head means which is placed in physical contact with said magnetic tape for generating an output signal indicative of the presence of a recorded section of said magnetic tape;

tape feed means for moving said magnetic tape past said reproduction head in a selected one of a plurality of operation modes;

amplifier means for amplifying said output signal from said reproduction head means;

nonrecorded section detection means for connecting said amplifier means to said power supply source at a desired time;

switching means responsive to an output signal of said amplifier means in such a manner that said switching means assumes a first condition when said output signal of said amplifier means is above a predetermined level and assumes a second condition when said output signal of said amplifier means is below said predetermined level;

charge/discharge circuit means connected to receive charging current from said power supply source through said switching means when said switching means assumes said first condition;

level detector means for detecting the charge level of said charge/discharge circuit; and

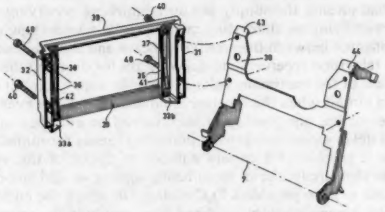
control means for charging said tape feed means from said selected one of said operation modes to another in accordance with the detection of said level detector means.

4,198,665

PIVOTABLE CASSETTE HOLDER FOR A MAGNETIC TAPE RECORDER APPARATUS

Johannes F. Hoefnagels, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,437
Claims priority, application Netherlands, Nov. 30, 1977, 77 13194
Int. Cl.[2] G11B *15/60*
U.S. Cl. 360—96.6 **4 Claims**



1. A cassette holder for a magnetic tape recording/playback apparatus, said holder being pivotably mounted to the apparatus for motion about a pivoting axis,

the holder being adapted to receive a cassette having two major walls and two coplanar adjoining magnetic tape reels rotatable about parallel axes of rotation, said axes of rotation being perpendicular to said walls; the cassette further including two closed side walls, a substantially closed rear wall, and a front wall, interconnecting said major walls, said front wall having openings for the passage of components of a recording/playback apparatus, the components including a magnetic recording/playback head, an erase head, and a pressure roller; the cassette side walls having each having a projecting ridge extending along a part of the respective side wall parallel to the major walls, disposed near the front wall at half the height of the side wall, whereby at the location of the ridges the cassette has an increased width; and each of the cassette major walls having a raised portion extending over the openings in the front wall, projecting outwardly from the major wall so that locally the cassette has an increased thickness,

said cassette holder comprising a first wall parallel to the major walls of an inserted cassette, a second wall parallel

to said first wall, two side walls, a bottom wall facing the pivoting axis, and an at least substantially open top side remote from the pivoting axis, the opening of the top side being adapted for insertion of a cassette into the cassette holder; stop means which engage the raised portions of the housing during insertion of an incorrectly positioned cassette into the holder, an incorrectly positioned cassette being one in which the substantially closed rear wall is oriented toward the bottom wall of the cassette holder; and guide means for cooperation with the cassette major walls near the cassette side walls and beside the cassette raised portion of locally greater thickness, said guide means comprising two guide ridges extending in the longitudinal insertion direction of, and near the side walls of, the cassette holder,

comprising the improvement wherein said guide ridges have a guide profile, nearer the insertion opening, which varies in height so as to allow a cassette to be inserted obliquely relative to the first and second walls of the cassette holder but during further insertion of a cassette forces the cassette into a position substantially parallel to said first and second walls, and

said stop means comprise a part of one of said first and second walls of the cassette holder, said part being situated near the insertion opening of the cassette holder for engagement with the locally thicker raised portion of an incorrectly inserted cassette, after the cassette has been inserted sufficiently so as to be forced into said substantially parallel position by the guide ridges, whereby further insertion of an incorrectly positioned cassette is prevented.

4,198,666

POSITIONING DEVICE FOR A WRITE/READ MAGNETIC HEAD IN A MAGNETIC-DISC DATA STORAGE DEVICE

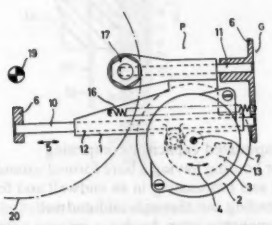
Klaus Manzke, Westheim; Roland Brotzler, Hochdorf-Assenheim; Gerhard Berg, Sandhausen, and Karl Uhl, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 8, 1978, Ser. No. 875,996

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1977, 2705125

Int. Cl.[2] G11B *21/08*

U.S. Cl. 360—106 **11 Claims**



1. In a positioning device for a write/read magnetic head, carried by a head support, for a magnetic-disc data storage system, said device including a spiral track on a motor-driven guide disc and a guide element continuously engaging a wall of said spiral track, for guiding the magnetic head on said head support across the magnetic disc, said motor being a step motor so that, by means of said guide element, said magnetic head may be halted in any desired position on the magnetic disc,

the improvement

that the guide wall on the surface of the guide disc is substantially perpendicular to the plane of the guide disc, and

that the guide element is in the form of a ball-bearing attached to the magnetic head support, the ball-bearing bearing against the guide wall and moving along said wall such that the friction between the guide wall and the ball-bearing is, at least predominantly, rolling friction.

4,198,667

MAGNETIC HEAD PLATFORM INCORPORATING AT LEAST ONE INTEGRATED TRANSDUCER

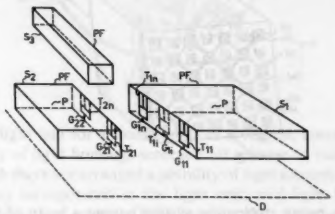
Jean P. Lazzari, Montfort l'Amaury, and Jean Desserre, Rambouillet, both of France, assignors to Compagnie Internationale pour l'Informatique, Paris, France

Filed Mar. 2, 1978, Ser. No. 882,592

Claims priority, application France, Mar. 18, 1977, 77 08168

Int. Cl.[2] G11B *5/12, 5/27, 5/22*

U.S. Cl. 360—123 **25 Claims**



1. A magnetic head-carrying platform comprising at least one substrate made of non-magnetic insulating material, at least one integrated magnetic transducer supported to said substrate, said transducer having conductive electrical output strips extending therefrom, a protective insulating member covering the transducer and the output strips and means for connecting the output strips to a connector, said means comprising thin layer conductors deposited on a surface of the substrate, said surface being perpendicular to the plane of the transducer.

4,198,668

HIGH-VOLTAGE DIRECT CURRENT INTERUPTION DEVICES

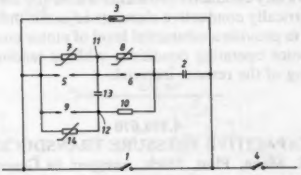
Bernt Bergdahl, and Erik Borg, both of Ludvika, Sweden, assignors to Asea Aktiebolag, Vesteras, Sweden

Filed Sep. 25, 1978, Ser. No. 945,788

Claims priority, application Sweden, Sep. 26, 1977, 7710729

Int. Cl.[2] H02H *7/22*; H01H *33/59*

U.S. Cl. 361—8 **9 Claims**



1. High-voltage direct current interrupting device comprising a commutating circuit-breaker with two parallel branches, one of said branches including a series connection of a capacitor and spark gap means, and the second of said branches includes a surge diverter for controlling the current and interrupting it upon opening of said commutating circuit-breaker, said spark gap means comprising at least two series-connected main spark gaps and a voltage divider connected in parallel therewith, said voltage divider distributing the voltage across said at least two main spark gaps, an ignition voltage-determining auxiliary spark gap and an impedance connected in series therewith are connected in parallel with at least one of said at

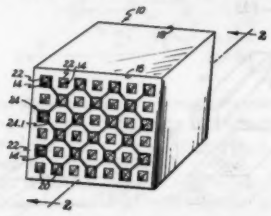
least two main spark gaps for effecting a continued ignition thereof.

4,198,669

COMPACT PTC RESISTOR

Bernard M. Kulwicki, Foxboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 721,727, Sep. 9, 1976, Pat. No. 4,107,515.
This application Feb. 21, 1978, Ser. No. 879,827
Int. Cl.[2] H02H 7/08
U.S. Cl. 361—24 **3 Claims**



1. In a motor protection system having a body of resistor material of positive temperature coefficient of resistivity which is arranged in series between an electrical power source and an electrical motor having at least one motor run winding so that selected levels of electrical current are normally supplied to said motor winding through the resistor body during normal running of the motor but so that the resistor material is adapted to self-heat to limit motor current to safe levels if an overcurrent conditions tends to occur in the motor winding, the improvement wherein said body of resistor material has a plurality of electrically conductive elements extending through said body of resistor material in spaced, side-by-side relation to each other in ohmic contact relation to the body for defining a plurality of relatively thin webs of resistor material between respective pairs of said elements in a rugged structure, said body having first electrically conductive means electrically connecting alternate ones of said elements together for electrically coupling said resistor material to said power source, having second electrically conductive means electrically connecting the others of said elements together for electrically coupling said resistor material to said motor winding, and having said elements disposed in closely spaced relation to each other so that said motor current is directed through a plurality of said webs of resistor material between said alternate electrically conductive elements within the body and said other electrically conductive elements adjacent thereto within said body to provide a substantial level of motor current under normal motor operating conditions without tending to cause overheating of the resistor material.

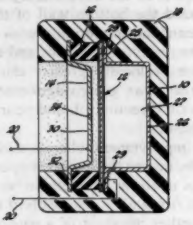
4,198,670

CAPACITIVE PRESSURE TRANSDUCER

Gamdur S. Mann, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1978, Ser. No. 961,995
Int. Cl.[2] H01G 7/00; G01L 9/12
U.S. Cl. 361—283 **3 Claims**

1. A capacitive pressure transducer comprising
a pressure responsive movable capacitor plate assembly including a metal diaphragm attached to support means at its periphery,
a fixed hat-shaped capacitor plate having a central surface closely spaced from the diaphragm to form with said diaphragm a capacitor of substantial value which is variable according to the position of the diaphragm and further having a peripheral surface widely spaced from the said support means to form a capacitor of fixed capacitance which is small relative to the said variable capacitance,
an insulating layer of metal oxide formed on at least one of the diaphragms and the fixed capacitor plate for preventing electrical contact therebetween,
an insulating spacer between the peripheral surface of the fixed capacitor plate and the said assembly,



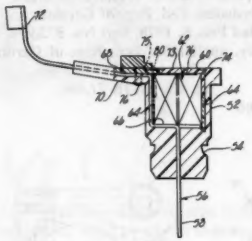
conductive leads connected to the fixed capacitor plate and the movable capacitor plate assembly, and
means for applying a pressure differential across the diaphragm whereby when pressure is applied the diaphragm flexes to vary the capacitance according to the value of the pressure differential.

4,198,671

CAPACITOR ASSEMBLY

Carolyn L. Donigan, 685 Hickory Heights Dr.; Deane B. MacMillan, 4243 Sunningdale, both of Bloomfield Hills, Mich. 48013, and James H. Srock, 624 W. Lincoln, Birmingham, Mich. 48009

Filed Jun. 5, 1978, Ser. No. 912,557
Int. Cl.[2] H01G 1/14
U.S. Cl. 361—306 **3 Claims**



1. An encapsulated capacitor comprising:
a capacitor housing having a bore formed extending into said housing and terminating in an endwall and formed with a slot extending out through said endwall;
a metal connector strap having a section extending along said bore to said endwall and having an end section extending away from said housing from said bore, a contact section extending across said endwall, and a prong extending and protruding through said slot formed in said housing;
an offset turn wound capacitor disposed in said bore with one end face in contact with said contact section of said connector strap, said capacitor being sized to leave a clearance space between said bore and the outside diameter of said capacitor;
a grounding lead comprised of a metal layer having a portion extending across the other end face of said capacitor and having a section having spaced leg sections formed thereon extending on either side of said end section of said connector straps away from said end face;

a spacer having spaced fingers extending into and occupying said clearance space and also having a portion overlying said ground lead portion in contact with said other end face of said capacitor;

encapsulating material molded into said clearance space and over the top of said capacitor securing said grounding strip and connector strap in position.

4,198,672

FLASHING DEVICE

Hermann Korber, Bunde, Fed. Rep. of Germany, assignor to Balda-Werke Photographische Gerate & Kunststoff GmbH & Co. K.G., Fed. Rep. of Germany

Filed Feb. 24, 1978, Ser. No. 881,104

Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721178

Int. Cl.[2] G03B *15/02*

U.S. Cl. 362—7 **6 Claims**

1. A dual mode electronic flash unit adapted to actuate a high voltage flash bulb, said dual mode electronic flash unit comprising, in combination, comprising an electronic flash tube adapted to be actuated in response to a high-voltage pulse being applied thereto, high-voltage supply means for selectively producing a high-voltage pulse, and contact means constructed and arranged to receive a high-voltage flash bulb and couple same to said high-voltage supply means to receive said high-voltage pulses selectively produced thereby and be ignited in response thereto.

4,198,673

FLASH BULB UNIT

Bauke J. Roelevink, Terneuzen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1978, Ser. No. 885,298

Claims priority, application Netherlands, May 16, 1977, 7705364

Int. Cl.[2] G03B *15/02*

U.S. Cl. 362—13 **2 Claims**

1. A flash bulb unit which comprises:

a plate-shaped support, a plurality of bulbs carried on one side of said support, an electric circuit cooperating with said plurality of combustion flash lamps, and an opaque plate on the other side of said support, said plate, as well as said support each being provided with a hole, each of said holes being disposed in aligned relation to at least one of said flash bulbs, said unit further including a foil disposed intermediate said holes in said support and said plate said foil disappearing upon flashing of said one of said bulbs, said hole in said support having a greater diameter at said other side than at said one side of said support, the diameter at said one side being smaller than the diameter of said hole in said plate and the part of the support proximate to said hole in said plate having a color which contrasts with that of said foil.

4,198,674

LIGHT UNIT FOR VEHICLES

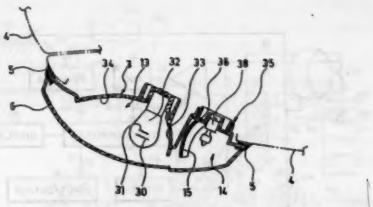
Bertil G. Ilhage, Trollhattän, and Björn E. A. Envall, Vänersborg, both of Sweden, assignors to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Jul. 20, 1977, Ser. No. 817,524

Claims priority, application Sweden, Jul. 21, 1976, 7608318

Int. Cl.[2] B60Q *1/00*

U.S. Cl. 362—80 **10 Claims**



1. A light unit for a front corner of a vehicle, comprising a plurality of light housings screened off relative to each other, in which there are arranged a plurality of light sources for light functions incorporated in the light unit, said light housings being formed in an inner light housing plate attached to the vehicle, there being vertical defining walls for at least one forward light housing in the light housing plate formed partly as a rear forwardly directed reflector and partly as an interior sideways directed reflector, characterized in that a rear light housing is arranged in the light housing plate at a location rearwardly of said forward housing, said rear housing having therein at least one light source which in coaction with a backwardly directed reflector provides a side backing light which can be switched on and off in response to engagement and disengagement of the vehicle reverse gear.

4,198,675

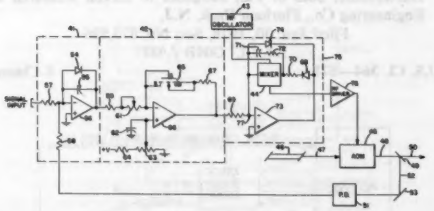
LINEARIZATION TECHNIQUE FOR CLOSED-LOOP ACOUSTO-OPTIC MODULATORS

George S. Moore, W. Lafayette, Ind., assignor to Harris Corporation of Cleveland, Ohio, Cleveland, Ohio

Filed May 19, 1978, Ser. No. 907,703

Int. Cl.[2] G06G *7/20*; G01J *1/32*; H04B *9/00*

U.S. Cl. 364—525 **24 Claims**



1. In a closed loop optical modulation system wherein an output beam of light is monitored and a signal representative of the output beam is fed back to be combined with an input signal and compensate for fluctuations in said output beam, the improvement comprising means for compensating for a square law non-linearity in the modulation transfer function of the system.

4,198,676

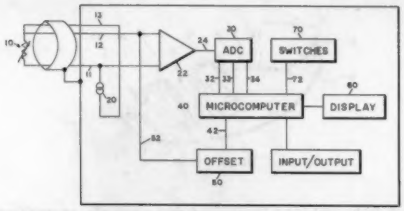
GENERAL PURPOSE ELECTRONIC THERMOMETER HAVING SELECTIVE DATA RECOVERY, DATA CONVERSION, AND DATA DERIVATION CAPABILITIES

Tracy L. Varnum, P.O. Box 682, Fort Bragg, Calif. 95437, and Robert L. Livezey, Jr., P.O. Box 98, Caspar, Calif. 95420

Filed Dec. 20, 1978, Ser. No. 971,370

Int. Cl.[2] G01K *7/14*

U.S. Cl. 364—557 **1 Claim**



1. An electronic thermometer comprising a resistance temperature detector, a source of constant current, means for connecting said source of constant current in electrical communication with said detector, amplifier means, means for connecting said amplifier means in electrical communication with said detector, analog to digital converter means, means for connecting said amplifier means in electrical communication with said analog to digital converter means, microcomputer means, means for connecting said microcomputer means in electrical communication with said analog to digital converter means, display means, means for connecting said display means in electrical communication with said microcomputer means;

wherein the improvement comprises voltage offset means for applying a predetermined voltage to said amplifier means, means for connecting said voltage offset means in electrical communication with said microcomputer means, means for control of said voltage offset means by said microcomputer means, means for representation of application of said voltage to said amplifier as a temperature differential by said microcomputer means for purposes of increasing the number of bits of information resolved by said analog to digital converter means.

4,198,677

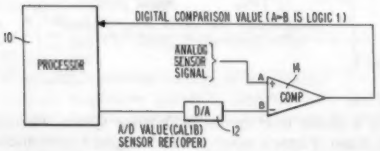
METHOD AND APPARATUS FOR COMPENSATING A SENSOR

Stanley N. Brunner, Downingtown, and George S. Bartley, Harleysville, both of Pa., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 30, 1978, Ser. No. 873,596

Int. Cl.[2] G05B *1/00*

U.S. Cl. 364—571 **8 Claims**



1. The method of using a sensor producing an analog signal with a processing means comprising the following calibration steps:

converting a digital output value from said processing means to an analog signal value;

comparing the sensed analog signal value with the converted digital output value;

changing the digital output value of said processing means in the absence of a predetermined relationship between the analog signal value and the converted digital output value;

reiterating the foregoing steps until a predetermined relationship exists between the analog signal value and the digital output value;

repeating the foregoing steps for different instantaneous analog signal values; and

storing at least one of said digital output values having said predetermined relationship in said processing means so as to represent a selected characteristic of said analog signal;

said method further comprising the following measuring steps:

generating a sensor calibrated digital output value at the output of said processing means from said at least one of said stored digital output values;

converting said sensor calibrated digital output value to a calibrated analog signal value

comparing the calibrated analog signal value to said analog signal.

4,198,678

VEHICLE CONTROL UNIT

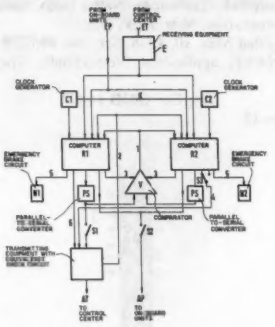
Henri Maatje, Oslo, Norway, and Richard Spannagel, Stuttgart, Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 16, 1978, Ser. No. 869,724

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1977, 2701924

Int. Cl.[2] G06F *15/50;* **B61L** *27/04*

U.S. Cl. 364—426 **8 Claims**



1. A control unit for a track-bound vehicle capable of exchanging data telegrams with a control center via transmitting and receiving equipment comprising:

two computers coupled to said receiving equipment, said transmitting equipment and on-board units, each of said two computers delivering as an output a life signal at regular intervals and each of said two computers, independent of each other, process data telegrams received by said receiving equipment to generate control commands for said on-board units and compile data telegrams concerning the condition, location and speed of said vehicle for said control center from data received from said on-board units, said control commands being delivered to said on-board units and said compiled data being transmitted to said control center only when said control commands and said compiled data telegrams produced by each of said two computers are identical;

a comparator coupled to each of said two computers to compare said control commands and said compiled data

telegrams from each of said two computers to determine whether they are identical, operation of said comparator being automatically checked from time to time by intentionally falsifying said control commands and said compiled data telegrams delivered by one of said two computers;

two clock generators each coupled to and controlling a different one of said two computers;

a direct connection between said two clock generators for synchronization of the clock frequency thereof; and

two emergency brake circuits each coupled to a different one of said two computers responsive to said life signals to initiate emergency braking if said life signals from the associated one of said two computers is not received within a given period of time.

4,198,679

METHOD AND DEVICE FOR DISCRIMINATING THERMAL EFFECT OF PHASE TRANSFORMATION OF METALS AND ALLOYS IN THE PROCESS OF THEIR COOLING

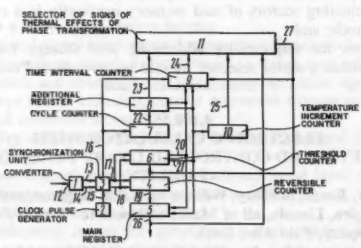
Leonid S. Fainzilberg, Kiev, U.S.S.R., assignor to Institut Kibernetiki Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

Filed Jun. 28, 1978, Ser. No. 920,121

Claims priority, application U.S.S.R., Jun. 28, 1977, 2500835; Jul. 8, 1977, 2509754

Int. Cl.[2] G06F *15/20*; G01N *25/02*

U.S. Cl. 364—497 **2 Claims**



1. A method for discriminating the thermal effect of phase transformation of metals and alloys in the process of their cooling, comprising the steps of:

cooling the metal or alloy at a measured temperature;

establishing an increment of said temperature relative to a maximum temperature recorded during temperature measurement;

calculating a threshold of duration of a temperature arrest after time elapsed since the start of temperature measurement; making a decision ascertaining the occurrence of the thermal effect of phase transformation, said threshold being calculated as a function of (a) the temperature of the metal or alloy being cooled, (b) an increment of said temperature relative to the maximum temperature recorded during the temperature measuring cycle, and (c) the time elapsed since the start of said temperature measuring cycle;

cooling metal or alloy and measuring the duration of the temperature arrest during cooling;

comparing the measured duration of the temperature arrest with the threshold value of the duration of the temperature arrest calculated for the moment when said temperature arrest occurs;

and ascertaining the occurrence of the thermal effect of phase transformation when measured duration of temperature arrest exceeds predetermined threshold of the duration of temperature arrest.

4,198,680

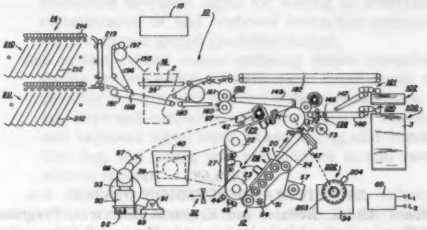
CONTROL SYSTEM FOR ELECTROSTATIC TYPE COPY REPRODUCING MACHINES

Gerald A. Gray, Jr., Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1977, Ser. No. 829,030

Int. Cl.[2] G06F *15/20*; G03G *15/00*

U.S. Cl. 364—518 **3 Claims**



1. In the method of operating an electrostatic type copy reproducing machine having a plurality of processing stations to produce copies in accordance with copy run instructions, said machine including relatively permanent background operating routines for operating said machine and foregrond routines, at least a portion of said foreground routines reflecting said copy run instructions, the steps which comprise:

a. actuating said background routines in preset timed order to render said processing stations operable;

b. interrupting said background routines periodically and in synchronism with said machine for a preset interval to carry out a foreground routine to activate predetermined processing stations;

c. shifting at least the portion of a foreground routine that cannot be completed in said preset interval into said background routine; and

d. completing any of said overlong foreground routine on return to said background routine.

4,198,681

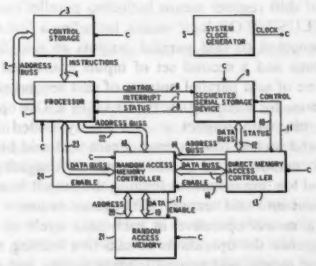
SEGMENTED STORAGE LOGGING AND CONTROLLING FOR PARTIAL ENTITY SELECTION AND CONDENSING

Glynn R. Furr, Jr., Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 25, 1977, Ser. No. 762,370

Int. Cl.[2] G06F *13/06*

U.S. Cl. 364—900 **6 Claims**



1. In a method of transferring a first randomly selected text entity between a serial storage device and a text processing system memory, wherein said memory is unable to contain all segment portions on which said entity is stored in said storage device, the improvement comprising:

determining a capacity M of said memory, said M being an integer indicative of the current unfilled storage capacity of said memory in whole portions;

transferrring M portions of said text entity into said text processing system memory; and

inhibiting the transferring of unused-available portions and error-unusable portions physically located on said storage device between logically adjacent text portions of said entity.

4,198,682

SYMPTOM COMPRESSION DEVICE

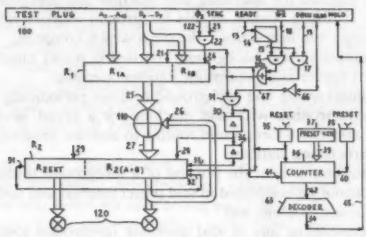
Alfonso Albani, Bollate, and Ermanno Maccario, Pregnana Milanese, both of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed Dec. 22, 1977, Ser. No. 863,463

Claims priority, application Italy, Dec. 31, 1976, 31040 A/76

Int. Cl.[2] G06F *5/00*

U.S. Cl. 364—900 **7 Claims**



1. A symptom compression device for compacting in an output pattern the symptoms occurring in different cycles during cyclical operation of a network on binary coded information, comprising:

first register means including parallel outputs;

first loading means for loading at least part of the binary coded information present in the course of each operating cycle at selected points of said network into said first register means;

second shift register means for storing binary coded information representative of accumulations of said symptoms, said shift register means including parallel outputs;

EXCLUSIVE OR logic means, including a first set of inputs connected to said parallel outputs of said first register means and a second set of inputs connected to at least some of said parallel outputs of said second shift register means, for effecting an EXCLUSIVE OR operation, bit by bit, with respect to said binary coded information stored in said first register means and said binary coded information stored in said second shift register means;

second loading means for loading the output from said logic means into said second shift register means;

timing means operative in each said cycle to control in sequence the operations of said first loading means, said logic means, said second loading means, and said second shift register means to provide a one bit shift operation therein; and

display means connected to said parallel output of said second shift register means for displaying the contents of said second shift register means.

4,198,683

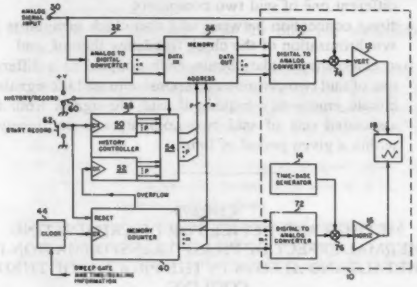
MULTIPLE WAVEFORM STORAGE SYSTEM

Thomas P. Dagostino, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 1, 1978, Ser. No. 901,903

Int. Cl.[2] G06F *3/05*

U.S. Cl. 364—900 **4 Claims**



1. A multiple waveform storage system, comprising:

a memory having 2^p sectors, each sector having 2^m addressable storage locations, for sequentially storing digital data representing a plurality of analog signals;

history control means for selecting sectors of said memory sequentially upon command in a storage mode such that digital data to be stored replaces the oldest data, and for selecting sectors of said memory cyclically in a readout mode; and

means for sequentially addressing said storage locations within a sector selected by said history control means.

4,198,684

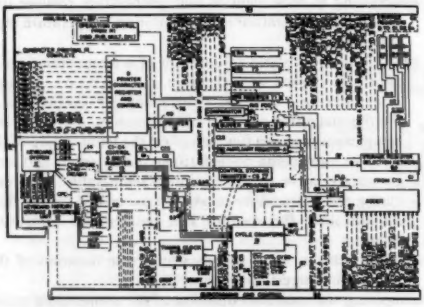
ELECTRONIC CALCULATOR WITH KEYBOARD-CONTROLLED UNARY FUNCTION CAPABILITY

Roy W. Reach, Sudbury; William M. Kahn, Brighton, and David Shapiro, Lincoln, all of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 390,645, Aug. 22, 1973, which is a continuation of Ser. No. 378,221, Jun. 26, 1964, abandoned. This application Oct. 13, 1976, Ser. No. 731,611

Int. Cl.[2] G06F *3/02, 3/14, 7/38*

U.S. Cl. 364—900 **6 Claims**



1. An electronic calculator comprising:

input means having a plurality of control elements including ten manual control keys representing numerical values from **0** through **9**;

input register means for accumulating a numerical argument entered by at least one of said control elements;

unary function means for generating the unary function of the numerical argument in said input register means, the unary function generated by said unary function means being usable as a factor in a succeeding calculation;

a single manual control button for initiating operation of said unary function means; and

output means for displaying the unary function generated by said unary function means in decimal digit form.

4,198,685

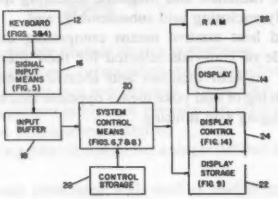
TEXT EDITING SYSTEM HAVING FLEXIBLE REPETITIVE OPERATION CAPABILITY WITH KEYBOARD INTERACTIVE FEATURE

Daniel W. Corwin, Dunstable; Harold S. Koplow, Lynnfield; David Moros, Winchester, and Paul Anagnostopoulos, Burlington, all of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Nov. 13, 1978, Ser. No. 959,649

Int. Cl.[2] G06F *3/02, 3/14*

U.S. Cl. 364—900 **3 Claims**



1. In a text-editing system having

keyboard signal input means for inputting signals including a select/store signal, a recall signal, a string and indicator signal, and character and text-editing operation signals,

storage means including current document storage and special condition storage,

display means including display control means and display storage,

system control means connected to said signal input means, storage means, and display means and having

read/write control means and

addressing means for generating a next address for the next read/write operation,

said system control means being responsive to said character and text-editing operation signals to control said addressing means and read/write control means for the text-editing operation of said system,

said system control means being responsive to the input of said character and text-editing operation signals for controlling said addressing and read/write control means to store representations of said signals in said current document storage and said display storage,

said system control means further comprising select/store means responsive to said select/store signal to select from said current document storage character and text-editing operation signals and to store said selected signals into said special condition storage,

said system control means including means thereafter responsive to a said recall signal for normally disabling said keyboard signal input means, and retrieving said stored character and text-editing operation signals from said special condition storage and for operating according to said retrieved signals,

that improvement wherein

said system further comprises keyboard interactive operation means for permitting input of character signals through said keyboard during operation responsive to said recall signal,

said keyboard signal input means further comprising means for inputting a keyboard interactive operation signal,

said system control means further comprising a keyboard interactive operation circuit, an interactive flag, and a saved address register coupled to said addressing means and read/write control means,

said system control means being responsive to said keyboard interactive operation signal to store an internal representation of said signal in said current document storage,

said select/store means including means responsive to a retrieved said internal representation of said keyboard interactive operation signal for storing an executable representation of said keyboard interactive operation signal into said special condition storage,

said system control means including means thereafter, during operation responsive to a said recall signal, responsive to a retrieved said executable representation of said keyboard interactive operation signal for enabling said keyboard signal input means, setting said interactive flag, and saving said next address in said saved address register,

said keyboard interactive operation circuit including means thereafter responsive to said set interactive flag and to the keyboard input of said character signals for controlling said addressing means and read/write control means to store said character signals into said display storage and current document storage, and responsive to said set interactive flag and to the keyboard input of said string end indicator signal for disabling said keyboard signal input means, resetting said interactive flag, and restoring said saved next address.

4,198,686

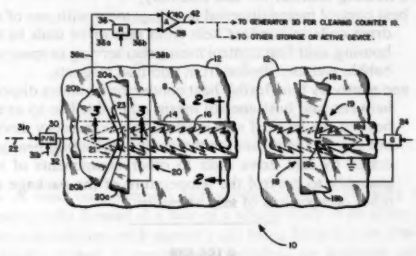
COUNTER FOR CROSS-TIE WALL MEMORY SYSTEM

George F. Nelson, Coon Rapids; Gregory J. Cosimini, St. Paul; Leslie H. Johnson, Minneapolis; David S. Lo, Burnsville; Maynard C. Paul, Bloomington, and Ernest J. Torok, Minneapolis, all of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 23, 1979, Ser. No. 20,764

Int. Cl.[2] G11C *19/08*

U.S. Cl. 365—79 **4 Claims**



1. A counter for a cross-tie wall memory system, comprising:

stripline means;

data track means superposed said stripline means forming successive wide and narrow portions along its length;

generator means at a first narrow portion of said data track means for selectively generating a cross-tie at said first narrow portion of said data track means;

detector means at a second narrow portion of said data track means forming a gap that is centered about said second narrow portion of said data track means, said generator means and said detector means sandwiching N narrow portions of said data track means therebetween;

replicator means coupling replicate drive fields to said data track means for replicating said selectively generated cross-tie in said generator means through said data track means and into said detector means gap;

readout means coupling a read drive field across said detector means gap for detecting the presence or absence of a cross-tie in said detector means gap and generating a corresponding Output signal indicating the presence or absence of a cross-tie, in said detector means gap; and,

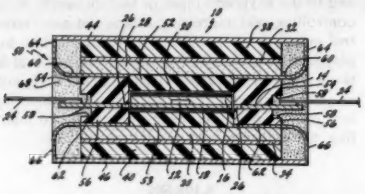
means responsive to said Output signal for coupling a Clear drive field to said data track means for annihilating all of the cross-ties replicated in said data track means and generating a signal indicating that N successive ones of said nucleate drive fields have occurred since the generation of said selectively generated cross-tie in said generator means gap.

4,198,687

BUBBLE MEMORY PACKAGE WITH THERMAL CONTROL

Wilbur T. Layton, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 11, 1978, Ser. No. 933,053
Int. Cl.[2] G11C *5/04*
U.S. Cl. 365—2 **11 Claims**



11. A bubble memory package comprising:

at least one level of bubble memory devices;

bias magnets means for establishing and maintaining said bubble memory device,

first and second drive coils adapted to generate first and second magnetic fields respectively, each coil oriented so that the magnetic field generated thereby is operative to propagate bubbles in said memory devices,

a housing member for said assembly,

heat control means disposed in engagement with one of said drive coils to conduct heat from said drive coils to said housing, said heat control means also serving to space said bubble memory device from said bias magnets,

and relatively thin flexible heat conductor members disposed between said heat control means and folded so to extend beyond the level of said level of bubble memory devices but spaced therefrom for thermally conducting heat generated by said drive coils to other components of said assembly to control the temperature of the package and other components of said assembly.

4,198,688

THERMAL CONTROL MEMBERS, BUBBLE MEMORY

Wilbur T. Layton, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 11, 1978, Ser. No. 933,055
Int. Cl.[2] G11C *5/04*
U.S. Cl. 365—2 **12 Claims**

1. A magnetic bubble package having an assembly of magnetic bubble memory components comprising,

bubble memory chip means mounted on a substrate,

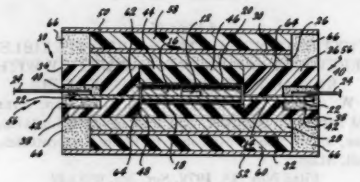
said substrate containing electrical conductors,

a plurality of drive coils for providing a magnetic field rotating in the plane of said chip means,

yoke means with bias magnets on each leg thereof and located with respect to the drive coils and said chip means to provide a magnetic field normal to the plane of said chip means,

first heat control means made of material selected for their thermal conductive qualities and positioned on said substrate and in engagement with means surrounding said bubble memory chip and bias magnets and serving to space said bubble memory chip means from said bias magnets,

said first heat control means also engaging a portion of said drive coils for transferring heat generated by said drive coils away from said coils,



a housing made of a material selected for its thermal conductive, radiation and magnetic shielding qualities and partially enclosing said subassembly, and

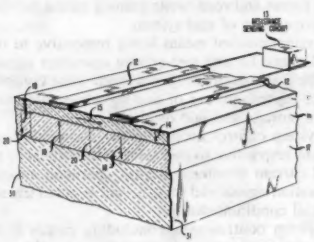
second heat control means comprising discrete members made of materials selected for their thermal conductive and resilient qualities and located in engagement with each leg of said yoke means opposite said bias magnets and engaging said housing.

4,198,689

GARNET MAGNETORESISTIVE SENSOR FOR MAGNETIC FIELDS

Ernst M. Gyorgy, Madison; Roy C. Le Craw, Summit, and Raymond Wolfe, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 30, 1978, Ser. No. 937,958
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—8 **13 Claims**



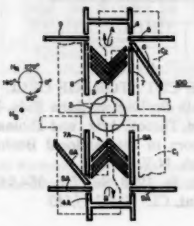
1. Apparatus for sensing a change in a magnetic field H_E, comprising a semiconducting body, and at least two electrodes, spaced apart from one another and attached electrically conducting to the semiconducting body, CHARACTERIZED IN THAT the semiconducting body consists essentially of single crystal or oriented polycrystalline iron garnet in which iron atoms occupy at least 70% of the tetrahedral and octahedral lattice sites, constituted to have electrical resistivity from 10^3 ohm-cm to 10^7 ohm-cm, whereby a change of H_E produces a change in the electrical resistance between the at least two electrodes.

4,198,690

MAGNETIC BUBBLE DOMAIN MEMORY DEVICE WITH INTEGRATED BUFFER

Isoris S. Gergis, and Thomas T. Chen, both of Yorba Linda, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 10, 1977, Ser. No. 823,318
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—15 16 Claims



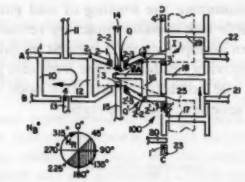
1. A magnetic bubble domain device comprising,
a plurality of adjacent propagation patterns which form portions of at least two independent propagation paths,
a recirculating pattern interposed between but separate from said adjacent propagation patterns,
said recirculating pattern comprises a single distinct element, and
conductor means associated with each of said propagation patterns and said recirculating pattern to selectively cause magnetic bubble domains to be transferred between the adjacent propagation patterns and said recirculating pattern in either direction.

4,198,691

COMPACT EXCHANGE SWITCH FOR BUBBLE DOMAIN DEVICES

Thomas T. Chen, and Isoris S. Gergis, both of Yorba Linda, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 688,652, May 21, 1976, abandoned.
This application Aug. 14, 1978, Ser. No. 933,235
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—15 14 Claims



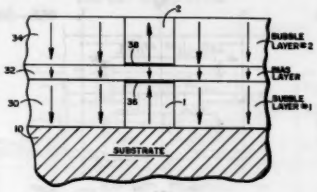
12. A compact exchange switch comprising
first and second propagation paths for magnetic bubble domains,
first and second magnetic pole supporting members joined together and extending between said first and second propagation paths and providing separate interconnecting paths between said first and second propagation paths, and
a single conductor disposed adjacent both of said first and second magnetic pole supporting members in order to selectively apply a magnetic field which permits magnetic bubble domains to be exchanged concurrently between said first and second propagation paths via the respective interconnecting poles formed by said first and second magnetic pole supporting members.

4,198,692

SELF-BIASED STRUCTURE FOR MAGNETIC BUBBLE DOMAIN DEVICES

Tsutomu Kobayashi, Placentia, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 22, 1978, Ser. No. 945,148
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—27 14 Claims



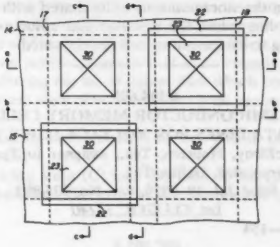
1. A self-biased structure for magnetic bubble domain devices comprising,
first and second layers of magnetic bubble domain materials, and
a magnetic biasing layer interposed between said first and second layers of magnetic bubble domain material.

4,198,693

VMOS READ ONLY MEMORY

Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 20, 1978, Ser. No. 890,557
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—104 8 Claims

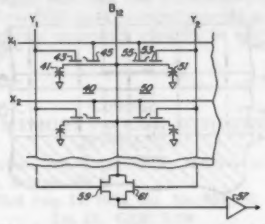


6. A read only memory array comprising: a plurality of memory cells formed at a face of a silicon body in an array of rows and columns; each memory cell being formed in an anisotropically etched V-groove and including an insulated gate field effect transistor having a source, a drain and a gate, the source being a buried heavily-doped region common to a plurality of the transistors, the gate being insulated from the silicon by a gate insulator along the sidewalls of the V-groove; a plurality of other insulated gate field effect transistors formed at said face of the silicon body in an area peripheral to the array; a first thick silicon oxide insulating coating only on said area peripheral to the array covering the other field effect transistors except at contact areas; interconnections in the peripheral areas formed by metal strips on top of said first silicon oxide coating and connected to the other field effect transistors at said contact areas; and impurity implanted regions underlying the gate and gate insulator in the sidewalls of the V-grooves for selected ones of the memory cells to alter substantially the threshold of the transistors of such cells compared to the transistors of memory cells other than the selected ones.

4,198,694
X-Y ADDRESSABLE MEMORY

James R. Eaton, Jr., Palo Alto; Charles G. Sodini, San Francisco, and Laurence G. Walker, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 27, 1978, Ser. No. 890,172
Int. Cl.[2] G11C *11/24, 11/40*
U.S. Cl. 365—149 10 Claims

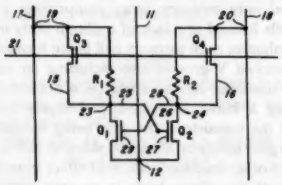


1. A semiconductor memory comprising:
an x-y array of memory cells on the substrate;
a plurality of row-lines, each row-line accessing in parallel the memory cells of a row of memory cells;
a plurality of column-lines, each column-line accessing in parallel the memory cells of a column of memory cells;
a plurality of bit-lines, each bit-line accessing in parallel the memory cells of at least one column of memory cells;
detection means for detecting a change in voltage appearing on the associated bit-line when charge from the memory cell is shared with the associated bit-line; and
each of the memory cells including therein;
(a) storage means for storing charge representing a digital logic state; and
(b) gating means responsive to activation of the associated row-line and column-line respectively to permit charge stored in the storage means to be shared with the associated bit-line when the row-line and column-line corresponding to said memory cell are activated.

4,198,695
STATIC SEMICONDUCTOR MEMORY CELL USING DATA LINES FOR VOLTAGE SUPPLY

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 19, 1978, Ser. No. 925,892
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—154 3 Claims

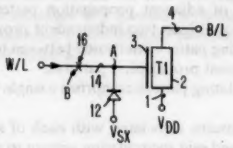


1. A static memory cell comprising a pair of cross-coupled driver transistors, a pair of coupling transistors, each of the transistors being an insulated gate field effect transistor and having source and drain regions and a gate electrode, a pair of data lines, means connecting the data lines to drain regions of the driver transistors via source and drain regions of the coupling transistors, means for addressing the cell by voltage on the gate electrodes of the coupling transistors, and a pair of resistors to apply a voltage to the data lines to provide supply voltage to the cell during time when the coupling transistors are not addressed, one of the resistors being connected in parallel with each of the coupling transistors, the transistors and resistors all being formed at a face of a body of semiconductor material, the gate electrodes being formed in a first level of polycrystalline silicon on said face and the resistors are formed in a second level of polycrystalline silicon on said face, the second level at least partly overlying the first level so that the resistors overlie the coupling transistors.

4,198,696
LASER CUT STORAGE CELL

Claude L. Bertin, South Burlington; John Bula, Essex, both of Vt.; Larry C. Martin, Tucson, Ariz., and Thomas A. Williams, Reston, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1978, Ser. No. 954,947
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—175 3 Claims



1. An FET read only storage circuit, comprising:
an FET device having a drain connected to a drain voltage, a source connected to an output node and a gate connected to a gate node, for storing one binary bit of information by the selective disconnection of said gate node with a signal input node;
a diode having a first pole connected to said gate node and a second pole connected to a reference voltage, oriented to be reversed biased when said gate node is biased to make said FET device conductive, for transferring electrostatic charge from said gate node;
a severable conductive link connected between said gate node and a signal input node, for selectively storing in said FET device one binary bit;
said diode minimizing the loading of said gate node when said severable link remains intact by remaining reversed biased when an input signal is present on said input node;
said diode removing residual charge from said gate node and preventing the potential of said gate node from floating when said severable link is severed.

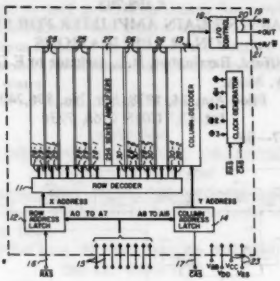
4,198,697
MULTIPLE DUMMY CELL LAYOUT FOR MOS RANDOM ACCESS MEMORY

Chang-Kiang Kuo, Houston, and Shyh-Chang Tsaur, Stafford, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 15, 1978, Ser. No. 915,692
Int. Cl.[2] G11C *7/00*
U.S. Cl. 365—210 6 Claims

1. In a memory system of the type having an array of rows and columns of memory cells, a sense amplifier positioned at the center of each of the column lines, and dummy cells for each half of the column lines, the improvement wherein a

plurality of rows of said dummy cells are positioned at spaced locations between the ends of each half of each column line, a



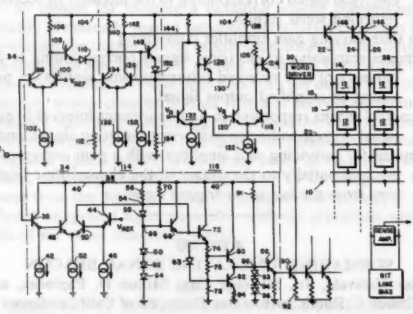
plurality of said memory cells being connected to each column line half on both sides of each row of dummy cells.

4,198,698

CHIP SELECT POWER-DOWN CONTROL CIRCUITRY

Warren R. Ong, San Francisco, and Walford Ho, Saratoga, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mt. View, Calif.

Filed Dec. 6, 1978, Ser. No. 966,985
Int. Cl.[2] G11C *7/02*
U.S. Cl. 365—226 **9 Claims**



1. Power-down control circuitry responsive to chip select and de-select input signals and to controlled circuit voltage levels for rapidly generating a first level output signal in response to a high de-select input signal and for generating a second level output signal only in response to both a low select input signal and predetermined voltage levels from the controlled circuit, said power-down control circuitry comprising:

input gating means for receiving the select and de-select input signals and for producing output signals at respective third and fourth levels, said third and fourth output levels being independent of the amplitudes of their respective select and de-select input signals;

controlled circuit voltage sensing means for continually monitoring the voltage levels of said controlled circuit and for producing a fifth predetermined output level when said controlled circuit voltage is lower than a predetermined reference level and a sixth predetermined output level when said controlled circuit voltage exceeds said reference level; and

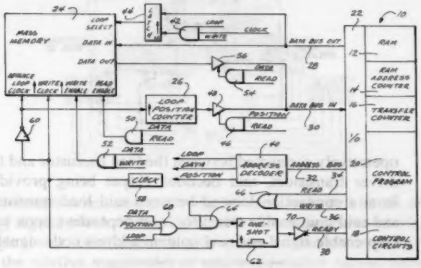
controlling circuit means responsive to the output levels of said input gating means and said controlled circuit voltage sensing means for generating the first level output signal in response to said fourth level produced by said input gating means, and for generating a second level output signal when said fifth output level produced by said sensing means exceeds said third level.

4,198,699

MASS MEMORY ACCESS METHOD AND APPARATUS

Richard W. Caddell, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Mar. 1, 1979, Ser. No. 16,149
Int. Cl.[2] G11C *13/00*
U.S. Cl. 365—230 **4 Claims**



1. A method of transferring digital data between a mass memory having a plurality of storage loops and having a loop position counter associated therewith and a random access memory having an address counter associated therewith, each of said storage loops having a capactiy to store N bits of digital data, and both of said counters having N steps in their counting cycle, said method comprising the steps of:

(A) selecting at least one storage loop in said mass memory which contains the data to be transferred to said random access memory or which is the destination for data to be transferred from said random access memory;

(B) setting said random access address counter to the same state as said loop position counter regardless of which step said loop position counter is at in its counting cycle;

(C) transferring the bit of digital data which corresponds to the current state of both counters from one memory to the other;

(D) advancing both counters by one step in their counting cycle; and

(E) repeating steps (C) and (D) until N bits of digital data have been transferred from one memory to the other.

4,198,700

COLUMN DECODE CIRCUIT FOR RANDOM ACCESS MEMORY

Keizoh Aoyama, Yamato; Hiroshi Shimada, Tokyo, and Eiji Noguchi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Japan

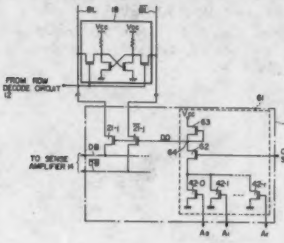
Filed Nov. 28, 1978, Ser. No. 964,185
Claims priority, application Japan, Dec. 20, 1977, 52/153194
Int. Cl.[2] G11C *8/00*
U.S. Cl. 365—230 **8 Claims**

1. A column decode circuit for a random access memory, having a memory matrix means including a plurality of memory cells, comprising:

a column address code source means for providing a column address code signal;

a column decoder unit which is comprised of a plurality of driver transistors, each of which receives, at a respective gate thereof, a column address code, and a decoder output means which is operatively connected to the driver transistors, and a transfer gate means which controls the transfer of a data output from a corresponding memory cell in said memory matrix in accordance with a decoder output produced from the decoder output means, wherein the

decoder output means is comprised of a voltage supply means, a load transistor which is connected to said voltage supply means and a chip enable transistor which receives at its gate a chip enable signal for accessing the corresponding memory cell, said chip enable transistor being



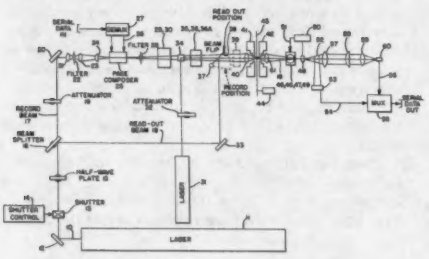
operatively connected between the load transistor and the driver transistors, said decoder output being provided from a connection located between said load transistor, and said chip enable transistor, and dependent upon said chip enable signal and said column address code signal.

4,198,701

DIGITAL OPTICAL RECORDER-REPRODUCER SYSTEM

Brad R. Reddersen, West Melbourne; Richard G. Zech, Satellite Beach, and Howard N. Roberts, Indialantic, all of Fla., assignors to Harris Corporation of Cleveland, Ohio, Cleveland, Ohio

Filed May 23, 1978, Ser. No. 908,726
Int. Cl.[2] G11C *11/42, 13/04*
U.S. Cl. 365—127 **26 Claims**



1. An optical recording and reproducing apparatus comprising:

first means for generating a first beam of light and directing said first beam of light onto a recording medium;

second means, disposed in the path of said first beam of light, for selectively modulating said first beam of light with a plurality of channels of information and imaging said plurality of channels of information to be recorded onto said recording medium so as to form an image of said plurality of channels of information thereon;

third means for directing a second beam of light onto said recording medium and thereby illuminating the recorded image of said plurality of channels of information which have been imaged and recorded thereon so as to project, via said second beam of light, the image of the plurality of channels of information recorded on said recording medium; and

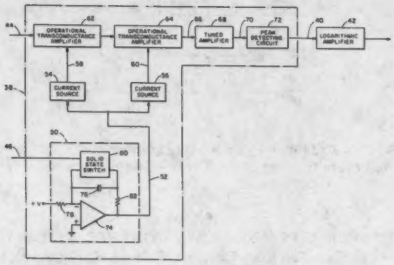
fourth means, disposed in the path of said second beam of light, for receiving the image projected by said third means and converting said image into an electrical signal representative of said information, while permitting variations in the location of incidence of said projected image thereon.

4,198,702

TIME VARYING GAIN AMPLIFIER FOR SIDE SCAN SONAR APPLICATIONS

Peter J. Clifford, Barrington, R.I., assignor to E G and G, Inc., Wellesley, Mass.

Filed Apr. 14, 1978, Ser. No. 896,240
Int. Cl.[2] G01S *9/66, 7/34*
U.S. Cl. 367—88 **7 Claims**



1. In a side scan sonar signal system having

at least one transmitting transducer for generating a short time duration side scan sonar signal in response to a sonar initiating signal, and

at least one receiving transducer for providing a received electrical signal corresponding to the intensity of received returning sonar signals,

a time varying gain amplifier comprising

means responsive to electrical signals corresponding to the intensity of said received returning sonar signals for providing an amplified output signal,

control means responsive to a measurement interval trigger signal corresponding to said sonar initiating signal, and

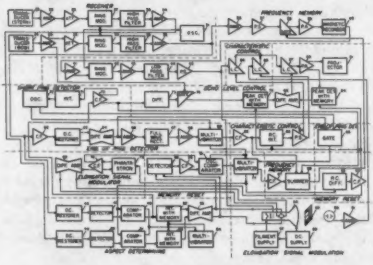
means for providing said amplifier with a gain corresponding substantially to the square of the elapsed time beginning from the last sonar trigger signal.

4,198,703

SUBMARINE SIMULATING SONAR BEACON

Peter Huisveld, Jr., National City; Milton D. Papineau, and Claude C. Routh, both of San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 12, 1960, Ser. No. 28,810
Int. Cl.[2] H04K *3/00*
U.S. Cl. 367—1 **11 Claims**



1. In a submarine simulating sonar beacon adapted for predetermined maneuvering under water, a hull having a forward and an aft transducer for receiving an acoustical signal within said water, means disposed in said hull connected to said for-

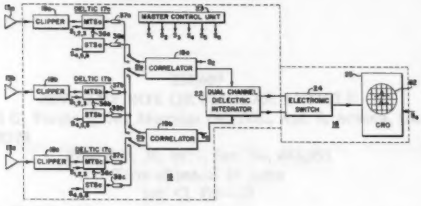
ward and aft transducers for comparing the time relationship of arrival of said acoustical signal thereat, means coupled to said comparing means for generating an output signal having a characteristic which is a function of said time relationship, means coupled to said generating means for amplitude and highlight modulation of said output signal, and transmitting transducer means mounted on said hull and coupled to said last mentioned means for broadcasting said modulated signal through said water.

4,198,704

PASSIVE UNDERWATER TARGET DETECTION AND LOCATING SYSTEM

John C. Munson, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 27, 1959, Ser. No. 802,575
Int. Cl.[2] G01S *3/80*
U.S. Cl. 367—125 **15 Claims**



1. A system for locating a radiating source comprising a plurality of mutually spaced radiation detectors, first means for correlating the output of one of said detectors with the output of a second of said detectors, second means for correlating the output of the second of said detectors with the output of a third detector, means coupled to said first and second correlating means for separately integrating the outputs thereof to produce a pair of integrated signals, and means for delaying one of said integrated signals with respect to the other of said integrated signals, whereby the delay is indicative of the range of the source from the detectors when the maximum amplitude of the delayed integrated signal coincides with the maximum amplitude of the other integrated signal.

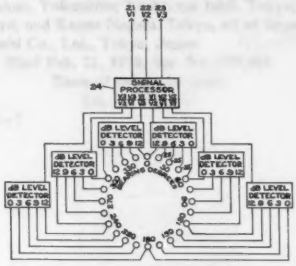
4,198,705

DIRECTIONAL ENERGY RECEIVING SYSTEMS FOR USE IN THE AUTOMATIC INDICATION OF THE DIRECTION OF ARRIVAL OF THE RECEIVED SIGNAL

Frank Massa, Cohasset, Mass., assignor to The Stoneleigh Trust, Donald P. Massa and Fred M. Dellorfano, Trustees, Cohasset, Mass.

Filed Jun. 9, 1978, Ser. No. 914,009
Int. Cl.[2] G01S *3/80*
U.S. Cl. 367—126 **8 Claims**

7. In combination in a directional energy receiving system, a plurality of directional receiving transducers, each characterized in that its receiving sensitivity S as a function of angle θ from its normal axis of maximum sensitivity is defined by the approximate relationship $S=(1+\cos\theta)$ over an angle of approximately $\pm 120°$ from its normal axis, structural means for mounting said directional receiving transducers in an array with the axis of maximum sensitivity of each directional transducer pointing 120° apart in relative bearing from its neighbor, electronic circuit means connected to the output of each of said directional receivers, said electronic circuit means including signal processing means for comparing the ratios of the magnitudes of the output signal level from each of said receiving



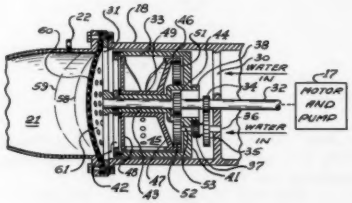
transducers when said receiving array is activated by an energy signal which is arriving from a direction whose bearing angle is unknown, and indicator means selectively responsive to the relative magnitudes of said comparative output signal levels for each of said receivers whereby said indicator means indicates said unknown bearing angle.

4,198,706

GENERATION OF LOW FREQUENCY SOUND UNDER WATER

Myron A. Elliott, Lynn Haven, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 21, 1959, Ser. No. 835,375
Int. Cl.[2] H04B *13/00*; G10K *7/00*
U.S. Cl. 367—148 **5 Claims**



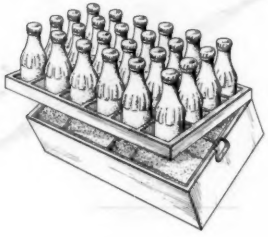
1. Apparatus for the generation of sound under water including a siren comprising a cylindrical stator casing open at each end and having at least one radial port and a cylindrical rotor member open at each end and mounted concentrically with respect to said stator casing, said rotor member having at least one radial opening circumferentially alined with said stator port, and a gas-filled compliance chamber having an elastic rubberlike wall closing one open end of said stator casing and operative to store and release hydraulic energy.

DESIGNS

APRIL 15, 1980

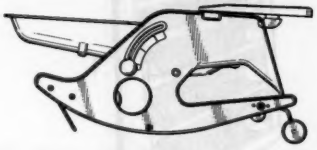
254,696
ROD AND REEL CASE
Robert E. Adams, 2 NW. 65th Ter., Gladstone, Mo. 64118
Filed May 25, 1978, Ser. No. 909,716
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—38

254,697
JEWELRY BOX OR SIMILAR ARTICLE
Earl G. Forsberg, 761 Morosgo Dr., NE., Apt. 6, Atlanta, Ga. 30324
Filed Oct. 20, 1977, Ser. No. 843,991
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—66

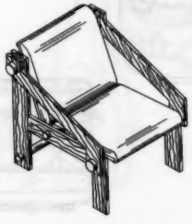


254,698
AUXILIARY SUITCASE OR SIMILAR ARTICLE
Abraham I. Tawil, New York, N.Y., assignor to H.I.T. Industries Ltd., Avenel, N.J.
Filed Jun. 6, 1977, Ser. No. 804,180
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

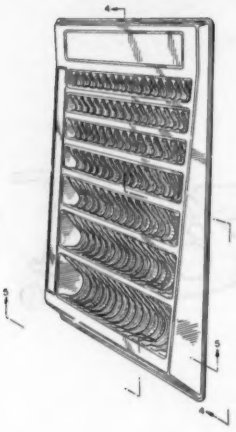
254,699
BABY CHAIR
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, Tokyo; Kenshun Ishii, Tokyo, and Kazuo Nagata, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Feb. 21, 1978, Ser. No. 879,401
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—7



254,700
ARMCHAIR
William J. Hershberger, Cincinnati, Ohio, assignor to Formica Corporation, Wayne, N.J.
Filed Nov. 7, 1977, Ser. No. 848,952
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



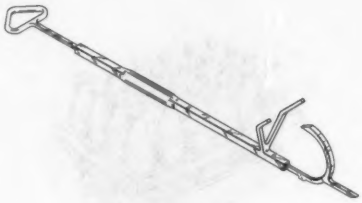
254,701
DISPLAY RACK FOR CLAMPS
William M. Blaiklock, Dundas, Canada, assignor to Tridon Limited, Burlington, Canada
Filed Sep. 12, 1977, Ser. No. 832,213
Claims priority, application Canada, Jun. 22, 1977, 2206776
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—114



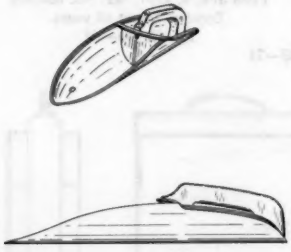
254,702
JUICER
Masao Tsuji, North Plainfield, and Ronald L. Muller, New Milford, both of N.J., assignors to North American Philips Corporation, New York, N.Y.
Filed Apr. 22, 1977, Ser. No. 790,028
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—49

254,703
RECORD CLEANER
Frank Seres, Hunters Hill, Australia, assignor to Seres & Associates Pty, Limited, Sydney, Australia
Filed Nov. 29, 1977, Ser. No. 855,655
Claims priority, application Australia, Jun. 7, 1977, 72022/77
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—161

254,704
FIREPLACE TOOL
Lloyd W. Hammond, 1209 Steele St., Denver, Colo. 80206
Filed Feb. 10, 1978, Ser. No. 877,426
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—210



254,705
GARDEN TROWEL
Peter M. Whiteside, Unit 2, Lot 125, Balcatta Rd., Balcatta, Western Australia, Australia, assignor to Peter M. Whiteside, Balcatta, Australia
Filed Sep. 16, 1977, Ser. No. 834,149
Term of patent 14 years
Int. Cl. D8—*01;* D7—*99*
U.S. Cl. D8—10



254,706

POWER-DRIVEN STAPLER

Edward E. Barrett, Massapequa Park; Albert Lensky, New York; John C. Costello, Syracuse, and Arthur J. Pulos, Fayetteville, all of N.Y., assignors to Swingline, Inc., Long Island City, N.Y.

Filed Oct. 3, 1977, Ser. No. 838,923
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—49

254,707

HOOK

Ruediger Einhorn, Katonah, N.Y., assignor to Coats & Clark, Inc., Stamford, Conn.

Filed Apr. 10, 1978, Ser. No. 895,002
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—367

254,708

COMBINED BOTTLE AND SQUEEGEE PACKAGE

Frank J. Mack, Kinnelon, N.J., assignor to American Home Products Corporation, New York, N.Y.

Filed Jun. 9, 1977, Ser. No. 805,207
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—10

254,709

BOTTLE

Robert J. McCredie, Spring Lake Heights, N.J., assignor to J L Prescott Company, Passaic, N.J.

Filed Apr. 7, 1977, Ser. No. 785,769
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60

254,710
BOTTLE
Jean Leger, Paris, France, assignor to Helena Rubinstein, Inc., New York, N.Y.
Filed Oct. 28, 1977, Ser. No. 846,601
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—71

254,711
BOTTLE OR SIMILAR ARTICLE
Vincent M. Shortino, Independence, Mo., assignor to Ethyl Development Corporation, Baton Rouge, La.
Filed Dec. 19, 1977, Ser. No. 862,230
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—143

254,712
BOTTLE OR SIMILAR ARTICLE
Vincent M. Shortino, Independence, Mo., assignor to Ethyl Development Corporation, Baton Rouge, La.
Filed Dec. 19, 1977, Ser. No. 862,231
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—143

254,713
BOTTLE OR SIMILAR ARTICLE
Vincent M. Shortino, Independence, Mo., assignor to Ethyl Development Corporation, Baton Rouge, La.
Filed Dec. 19, 1977, Ser. No. 862,234
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—143

254,714
BEVERAGE CONTAINER
Carmen T. Mascia, Clarendon Hills, and Gary K. Hasegawa, Chicago, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.
Filed Aug. 25, 1977, Ser. No. 827,537
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—163

254,715
PACKAGE OF NEEDLES
Kurt Lorber, Schurwaldstrasse 114, D-7307 Aichwald 2, Fed. Rep. of Germany
Filed Jun. 9, 1977, Ser. No. 805,046
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1976, 1003
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—172

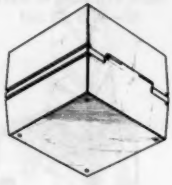
254,716
BEVERAGE CONTAINER
Carmen T. Mascia, Clarendon Hills, and Gary K. Hasegawa, Chicago, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.
Filed Aug. 25, 1977, Ser. No. 827,535
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—182

254,717
CAN
Carmen T. Mascia, Clarendon Hills, and Gary K. Hasegawa, Chicago, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.
Filed Aug. 15, 1977, Ser. No. 824,661
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—217

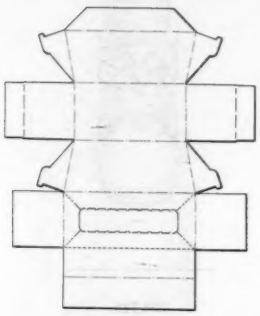
254,718
CAN
Carmen T. Mascia, Clarendon Hills, and Gary K. Hasegawa, Chicago, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.
Filed Aug. 15, 1977, Ser. No. 824,662
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—217

254,719
CAN
Carmen T. Mascia, Clarendon Hills, and Gary K. Hasegawa, Chicago, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.
Filed Aug. 15, 1977, Ser. No. 824,893
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—217

254,720
RING BOX OR SIMILAR ARTICLE
Eric Schuander, South Orange, N.J., assignor to The Alsten Company, Jersey City, N.J.
Filed Mar. 15, 1977, Ser. No. 777,929
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—235

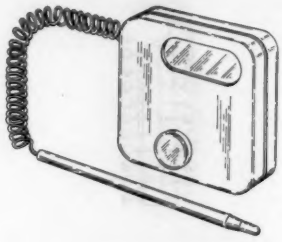


254,721
CARTON BLANK
Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Apr. 22, 1977, Ser. No. 790,022
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245

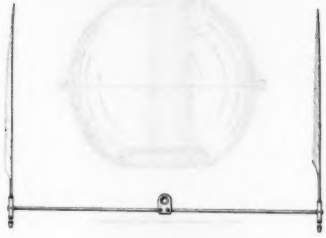


254,722
INSTRUMENT FOR SENSING MAGNETIC VARIATIONS IN THE ATMOSPHERE
Frances Laurence, Greenwich, Conn., assignor to Laurence Enterprises, Inc., Greenwich, Conn.
Filed Nov. 21, 1977, Ser. No. 853,631
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—47

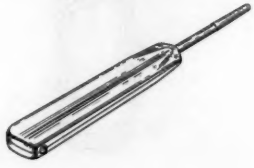
254,723
DIGITAL THERMOMETER
William J. Lawrence; Eugene J. Sulek, and William R. Hawkins, all of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Feb. 23, 1978, Ser. No. 880,663
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57



254,724
WIND INDICATOR FOR BOATS
Sean Cassedy, and Nancy V. Cassedy, both of Middletown, R.I., assignors to Twindicator Designs, Inc., Middletown, R.I.
Filed Sep. 23, 1977, Ser. No. 836,245
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—59



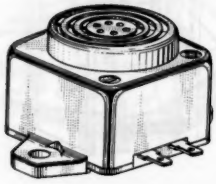
254,725
TEMPERATURE SENSING PROBE
Paul O. Rawson, Easton, and Louis E. Nagy, Killingworth, both of Conn., assignors to United States Surgical Corporation, Stamford, Conn.
Filed Apr. 20, 1977, Ser. No. 789,344
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—60



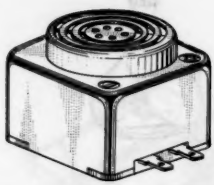
254,726
COMBINED TEMPERATURE AND RESPIRATION SENSING PROBE
Leon C. Hirsch, Westport; Paul O. Rawson, Easton, and Louis E. Nagy, Killingworth, all of Conn., assignors to United States Surgical Corporation, Stamford, Conn.
Filed Apr. 20, 1977, Ser. No. 789,345
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—60

254,727
ELECTRONIC BUZZER OR SIMILAR ARTICLE
Yoshio Mitumori, Shizuoka, Japan, assignor to Star Seimitsu Kabushiki Kaisha, Shizuoka, Japan
Filed Nov. 2, 1977, Ser. No. 847,808
Claims priority, application Japan, Aug. 22, 1977, 52-33467
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116

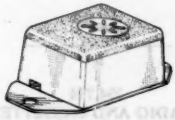
254,728
ELECTRONIC BUZZER OR SIMILAR ARTICLE
Yoshio Mitumori, Shizuoka, Japan, assignor to Star Seimitsu Kabushiki Kaisha, Shizuoka, Japan
Filed Dec. 21, 1977, Ser. No. 862,766
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116



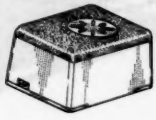
254,729
ELECTRONIC BUZZER OR SIMILAR ARTICLE
Yoshio Mitumori, Shizuoka, Japan, assignor to Star Seimitsu Kabushiki Kaisha, Shizuoka, Japan
Filed Dec. 21, 1977, Ser. No. 862,960
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116



254,730
ELECTRONIC BUZZER OR SIMILAR ARTICLE
Yoshio Mitumori, Shizuoka, Japan, assignor to Star Seimitsu Kabushiki Kaisha, Shizuoka, Japan
Filed Jan. 4, 1978, Ser. No. 866,927
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116

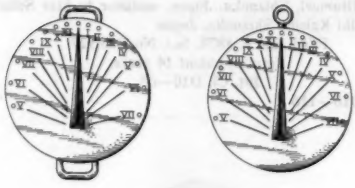


254,731
ELECTRONIC BUZZER OR SIMILAR ARTICLE
Yoshio Mitumori, Shizuoka, Japan, assignor to Star Seimitsu Kabushiki Kaisha, Shizuoka, Japan
Filed Jan. 4, 1978, Ser. No. 866,949
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116



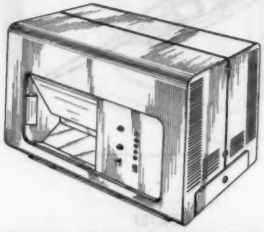
254,732
PENDANT
Harvey Kalef, Toronto, Canada, assignor to Imaginamics Inc., Toronto, Canada
Filed Apr. 13, 1977, Ser. No. 787,268
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—81

254,733
SUNDIAL MEDALLION
Donald M. Faulkner, 29 Stiles Dr., Melville, N.Y. 11746
Filed Mar. 6, 1978, Ser. No. 884,000
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—99

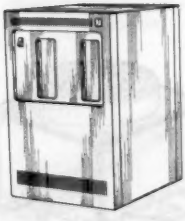


254,734
COMBINED RADIO AND CASSETTE RECORDER
Hoi T. Vong, 179/180 Connaught Rd. West, Cheung Ka Industrial Bldg., 19th Floor, Block A, West Point, Hong Kong
Filed Oct. 25, 1977, Ser. No. 845,159
Claims priority, application United Kingdom, Aug. 19, 1977, 981239/77
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—5

254,735
DUAL DISPLAY STATION FOR A DATA PROCESSING SYSTEM
Charles A. Pycha, Chicago, Ill., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 13, 1978, Ser. No. 877,540
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—42

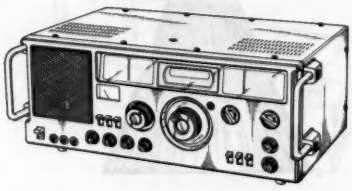


254,736
MAGNETIC STORAGE UNIT FOR A DATA PROCESSING SYSTEM
Collan B. Kneale, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 12, 1978, Ser. No. 869,081
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—46

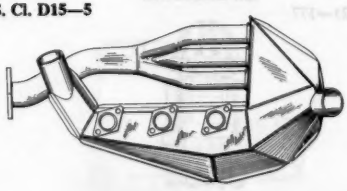


254,737
RADIO RECEIVER
Satoru Usami, Hirakata, and Kikuo Ohta, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza-Kadoma, Japan
Filed Oct. 13, 1977, Ser. No. 841,854
Claims priority, application Japan, Apr. 18, 1977, 52-14513
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68

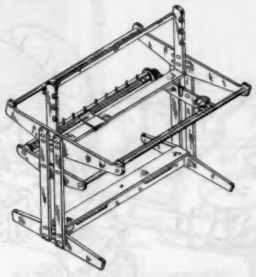
254,738
RADIO RECEIVER
Kunio Hoshino, Kadoma, and Kikuo Ohta, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Oct. 13, 1977, Ser. No. 841,853
Claims priority, application Japan, Apr. 18, 1977, 52-14511
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



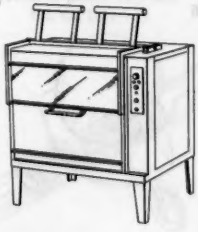
254,739
AUTOMATIVE ENGINE HEAT EXCHANGER
Gregory W. Bailey, Box 12, Rock Hall Rd., Rock Hall, Conn. 06021
Filed Dec. 2, 1977, Ser. No. 857,353
Term of patent 14 years
Int. Cl. D15—*1*
U.S. Cl. D15—5



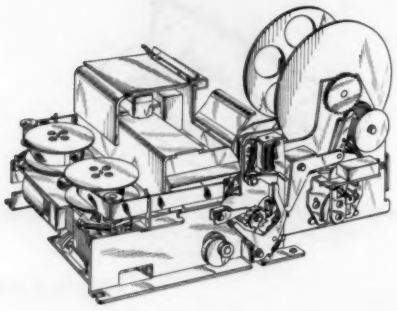
254,740
LOOM
Robert P. Orr; Joan B. Orr, and Thomas P. Orr, all of 104 Main St., Tiburon, Calif. 94920
Filed Mar. 7, 1978, Ser. No. 884,261
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—66



254,741
BARBECUE MACHINE
V. L. Friedl, Lachine, and Bernardino Mascetti, La Salle, both of Canada, assignors to J. Hardt Mfg. Inc., Lachine, Canada
Filed Dec. 6, 1977, Ser. No. 857,930
Claims priority, application Canada, Nov. 25, 1977, 2511771
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—108



254,742
PRINTER FOR ELECTRICAL CASH REGISTER
Shigeyoshi Hirabayashi, and Chihiro Otsuki, both of Shiojiri, Japan, assignors to Kabushiki Kaisha Suwa Seikosha and Shinshuseiki Kabushiki Kaisha, both of, Japan
Filed Dec. 16, 1977, Ser. No. 861,483
Claims priority, application Japan, Jul. 16, 1977, 52-23433
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—4

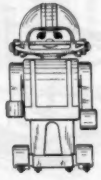


254,743
SIMULATIVE TOY VEHICLE
Joseph Petrisco, 673 Bend Dr., Sunnyvale, Calif. 94087
Filed Oct. 25, 1977, Ser. No. 844,700
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—76

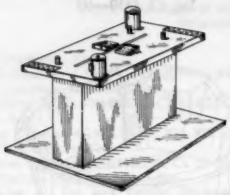
254,744
COMBINED TOY PROJECTOR AND ARROW THEREFORE
Joseph Pinette, 1302 Sabattus Rd., Lewiston, Me. 04240
Filed Aug. 15, 1977, Ser. No. 824,988
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—82

254,745
TOY HOUSE
Robert W. Engel, 2745 Provincetown Dr., Toledo, Ohio 43613
Filed Sep. 23, 1977, Ser. No. 835,980
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114

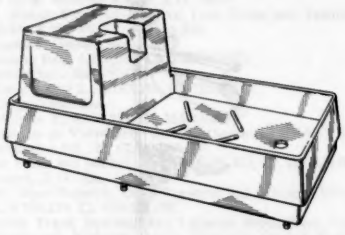
254,746
WHEELED TOY FIGURE
Masaru Ogihara, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jul. 20, 1977, Ser. No. 817,383
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—177



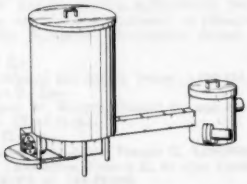
254,747
ARM WRESTLING TABLE
Maurice O'Meara, R.R. #2, Charter Oak, Iowa 51439
Filed Apr. 11, 1978, Ser. No. 895,300
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—199



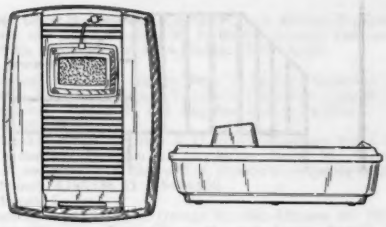
254,748
SHOWER STALL BASE
Alf L. Anderson, Box 231, S-694 02 Hallsberg, Sweden
Filed Mar. 14, 1977, Ser. No. 777,507
Claims priority, application Sweden, Sep. 14, 1976, 731779
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



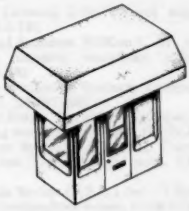
254,749
STOKER APPARATUS FOR HEATING BOILERS
Sjunne Johansson, Erlandsliden 4, S-302 41 Halmstad, Sweden
Filed Dec. 21, 1977, Ser. No. 862,935
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—125



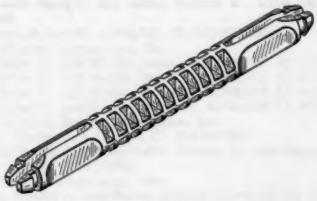
254,750
VAPORIZER HUMIDIFIER
Paal Myklebust, and Eugene R. Luedtke, both of Reedsburg, Wis., assignors to Gerber Products Company, Fremont, Mich.
Filed Sep. 6, 1977, Ser. No. 831,011
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—146



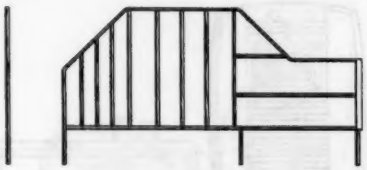
254,751
RETAIL SALES BUILDING
Michael F. Adler; Alan S. Cohen; Cal F. Graser; Thomas R. Hamilton, and Iver L. Johnson, all of Progressive Industries Corporation, 2030 Kuntz Rd., Dayton, Ohio 45404
Filed Nov. 2, 1978, Ser. No. 957,043
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—16



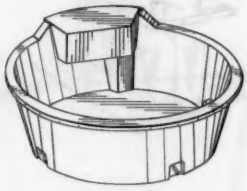
254,752
STRUT FOR CONSTRUCTION SET
Richard J. Gabriel, Beaverton, Oreg., assignor to Matrix Toys, Inc.
Filed Jan. 9, 1978, Ser. No. 868,129
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D25—78



254,753
GESTATION STALL DIVIDER
Richard A. McDonald, General Delivery, Gunton, Manitoba, Canada (R0C 1H0)
Filed Jul. 31, 1978, Ser. No. 929,247
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



254,754
WATER TROUGH
James M. Harrison, Shrewsbury, England, assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Dec. 30, 1977, Ser. No. 866,474
Claims priority, application United Kingdom, Jul. 2, 1977, 980632/77
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—16



254,755
COMBINED NAMEPLATE AND MAILBOX SUPPORT POLE
Sonny J. Mortensen, 10660 S. 540 East, Sandy, Utah 84070, and Kent J. Mortensen, 12310 S. 2445 West, Riverton, Utah 84065
Filed Jan. 23, 1978, Ser. No. 871,558
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—32

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF APRIL, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Chance Company: *See*—
Mahieu, William R., 4,198,615, Cl. 337-162.000.

A. H. Robins Company, Inc.: *See*—
Munson, Harry R., Jr., 4,198,414, Cl. 424-258.000.

AB Fyrtornet: *See*—
Hedengerg, Gunnar, 4,198,197, Cl. 425-305.100.

AB Svenska Flaktfabriken: *See*—
Wilhelmsson, Gunnar R., 4,198,216, Cl. 55-341.00R.

Abbey Etna Machine Company, Inc.: *See*—
Young, John L., Sr.; and Dreier, Richard L., 4,197,729, Cl. 72-52.000.

Abbott Laboratories: *See*—
Reichler, Allen S.; and Swaton, Larry E., 4,198,484, Cl. 435-296.000.

Abe, Haruo; and Yasukuni, Mitsuo, to Minolta Camera Kabushiki Kaisha. Zoom lens system capable of macrophotography. 4,198,126, Cl. 350-184.000.

Abraham, Edward D.; and Hartung, Rodney L., to Carver Foundry Products. Foundry sand molding apparatus. 4,197,901, Cl. 164-154.000.

Abraham, Fayez F.; and Perez, Arthur, to Tyler Refrigeration Corporation. Multideck freezer and elimination of all antisweat heater wire. 4,197,718, Cl. 62-248.000.

ACF Industries, Incorporated: *See*—
Hillstead, David P.; Randolph, Robert W.; and Behle, Gunter R., 4,198,032, Cl. 251-144.000.

Ackerman, Richard J., Jr. Orthodontic method and appliance. 4,197,644, Cl. 433-7.000.

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Adlerwerke vorm. Heinrich Kleyer A.G.: *See*—
Stuiber, Walter; Mansfeld, Manfred; Geis, Heinz; and Teichmann, Friedrich, 4,198,169, Cl. 400-144.200.

ADP - Automaten GmbH: *See*—
Gauselmann, Paul, 4,198,052, Cl. 273-143.00R.

Aerial Industrial Inc.: *See*—
Schellhorn, Verne L., 4,197,828, Cl. 125-23.00C.

Aeroquip Corporation: *See*—
Herbert, John T., 4,198,078, Cl. 285-49.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Kant, Michel, 4,198,572, Cl. 290-44.000.
Trombe, Felix; and Michel, Jacques, 4,197,993, Cl. 126-429.000.

AGFA-Gevaert, A.G.: *See*—
Credner, Hans-Heinrich; Otto, Rigobert; and Schranz, Karl-Wilhelm, 4,198,239, Cl. 430-566.000.
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,198,136, Cl. 352-169.000.
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Ahmed, Adel A. A., to RCA Corporation. Temperature compensating comparator. 4,198,581, Cl. 307-310.000.

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Airco, Inc.: *See*—
Kirk, Bradley S.; and Kirschner, Mark J., 4,198,266, Cl. 162-29.000.

Aisenberg, Sol: *See*—
Ezekiel, Frederick D.; and Aisenberg, Sol, 4,198,031, Cl. 251-117.000.

Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Method of producing zeolitic catalysts with silica alumina matrix. 4,198,319, Cl. 252-455.00Z.

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Alasia, Alfred V. Encoding system. 4,198,147, Cl. 354-115.000.

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Albert, Walter: *See*—
Mylich, Wolfgang; and Albert, Walter, 4,198,486, Cl. 521-79.000.

Albrecht, Albert B.: *See*—
Heaton, James W.; Warren, Donald W.; and Albrecht, Albert B., 4,197,771, Cl. 82-36.00B.

Albus, Francis E.: *See*—
Albus, James F.; and Albus, Francis E., 4,198,004, Cl. 241-39.000.

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Aldridge, Frederick A.; Gotshall, James T.; and Schertz, Burtron D., to General Motors Corporation. Radio receiver audio attenuator. 4,198,603, Cl. 455-234.000.

Alexander, David H.; Hershman, George H.; Jack, Michael D.; Koda, N. John; and Lloyd, Randahl B., to Hughes Aircraft Company. Monolithic imager for near-IR. 4,198,646, Cl. 357-30.000.

Alexiev, Boris V.: *See*—
Golovinski, Evgeni V.; Alexiev, Boris V.; Spassov, Alexander V.; Stoev, Stoycho B.; Maneva, Lilyana S.; Emanuilov, Emanuil A.; Stoychev, Tzanko S.; and Angelov, Ivan I., 4,198,433, Cl. 424-320.000.

Aliev, Vagab S.; Rizaev, Ramiz G. K. O.; Gadzhi-Kasumov, Veli S. M. O.; Ter-Sarkisov, Beniamin G.; Talyshinsky, Rashid M.; Pilaeva, Lidia P.; and Seifullaeva, Zhalya M. K. Process for preparing butadiene (divinyl). 4,198,536, Cl. 585-626.000.

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Aljet Equipment Company: *See*—
Albus, James F.; and Albus, Francis E., 4,198,004, Cl. 241-39.000.

All-Phase Electronics Inc.: *See*—
Whitson, Donald W., 4,197,607, Cl. 15-4.000.

Allied Chemical Corporation: *See*—
Hale, Harry F.; Hackler, Lewis R.; and Biron, Raymond J., 4,197,606, Cl. 8-149.200.
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Reese, Jack L.; Grubb, Robert G.; and Chacour, Selim A., 4,197,629, Cl. 29-560.000.

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AM International, Inc.: *See*—
Nelson, Alfred M.; and Davis, David L., 4,197,811, Cl. 118-50.000.

Amberg, Stephen W.; and Doherty, Thomas E., to Owens-Illinois, Inc. Nestable foam cup. 4,197,948, Cl. 206-520.000.

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Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,198,521, Cl. 560-118.000.
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Anada, Harish R., to Ramcor, Inc. Process for in situ coal gasification. 4,197,911, Cl. 166-261.000.

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Anderson, David G., to Miner Enterprises, Inc. Method of making polyester elastomer compression spring and resulting product. 4,198,037, Cl. 267-153.000.
Anderson, Edmund M. Portable pulmonary respirator, intermittent positive pressure breathing machine and emergency oxygen equipment. 4,197,842, Cl. 128-203.120.
Anderson, Stanley L.; and Nettleton, Donald F. Automatic feeding apparatus for punch press. 4,197,772, Cl. 83-63.000.
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Yamashita, Hideo; Andoh, Shizuo; and Shinoda, Tsutae, 4,198,585, Cl. 313-218.000.
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Andrews, William J.; and Philpott, William J. M., to British Cellophane Limited. Method of making a heat-sealable oriented polypropylene film. 4,198,256, Cl. 156-229.000.
Angelov, Ivan I.: *See*—
Golovinski, Evgeni V.; Alexiev, Boris V.; Spassov, Alexander V.; Stoev, Stoycho B.; Maneva, Lilyana S.; Emanuilov, Emanuil A.; Stoychev, Tzanko S.; and Angelov, Ivan I., 4,198,433, Cl. 424-320.000.
Anglin, Noah L.; and Berry, Robert H., to Verbatim Corporation. Tensioning means for belt driven tape cassette. 4,198,013, Cl. 242-192.000.
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Scott, Henry J.; and Scott, Lenore, 4,198,047, Cl. 273-1.00R.
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a'Porta, Ruedi: *See*—
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Appleton, Arthur I. Vehicle with space tradeable between rear seat and trunk. 4,198,091, Cl. 296-63.000.
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Van Steenwyk, Donald H.; Cash, John R.; and Ott, Paul W., 4,197,654, Cl. 33-304.000.
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Ariga, Nagao; Yamamoto, Minoru; Takahashi, Katsuji; and Mizuno, Takehisa, to Dainippon Ink & Chemicals, Inc. Process for stereoisomerization of cis-3-methyl-Δ^4-tetrahydro-cis,cis-phthalic anhydride. 4,198,340, Cl. 260-346.300.
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Adams, Kim M.; Dees, Martin, Jr.; and Mazzur, Richard P., 4,198,456, Cl. 428-159.000.
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Armstrong, Richard G.: *See*—
Pletcher, Jackie E.; Johnson, Brady G.; and Armstrong, Richard G., 4,198,022, Cl. 248-320.000.
Arnaud, Claude J.; Quemner, Jean M.; and Roche, Gaston P., to Societe Anonyme de Telecommunications. Volatile liquid supply equipment and processes for introducing volatile cross-linking agents into polyolefin compounds and for the extrusion of cross-linkable polyolefin compounds. 4,198,374, Cl. 422-111.000.
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Itoh, Takayuki, 4,198,127, Cl. 350-184.000.
Nomura, Katsuhiko; and Haraguchi, Keisuke, 4,198,149, Cl. 354-268.000.
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Asai, Koichi; and Kawada, Tousuke, to Fugi Mfg. Co., Ltd. Method of inserting electronic components to a printed circuit board and an apparatus therefor. 4,197,638, Cl. 29-741.000.
Asano, Kenji, to Nippon Piston Ring Co., Ltd. Leakage gas recirculation system for use in stirling engine. 4,197,707, Cl. 60-517.000.
Asano, Kiro: *See*—
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Aterianus, John S.; and Crawford, Donald C., to FMC Corporation. Automatic feeding of spaced articles to a processing machine. 4,197,935, Cl. 198-460.000.
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Wentzheimer, W. Wayne; and Melpolder, Frank W., 4,198,530, Cl. 568-697.000.
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AuClair, Christopher J.: *See*—
Williams, Meurig W.; and AuClair, Christopher J., 4,198,477, Cl. 430-120.000.
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Auernhammer, Marcus J. Detachable handle assembly. 4,197,764, Cl. 74-544.000.
Austin, John J., to Champion International Corporation. Tamperproof dispensing carton and blank therefore. 4,197,985, Cl. 229-17.0SC.
Ayer, Donald E., to Upjohn Company, The. Trans-4,5-didehydro-PGI$_1$ amides. 4,198,500, Cl. 542-426.000.
Ayerst McKenna & Harrison Ltd.: *See*—
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B & H Commercial Inventors & Designers Limited: *See*—
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Baba, Michiru, to Nippon Gakki Seizo Kabushiki Kaisha. Tuning apparatus. 4,198,606, Cl. 328-141.000.
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Baldwin, John J.; and Novello, Frederick C., to Merck & Co., Inc. 1,2,4-Triazoles. 4,198,513, Cl. 546-167.000.
Ballman, Gray C. Battery charger control device. 4,198,593, Cl. 320-31.000.

Bally Manufacturing Corporation: *See*—
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Bardin, Karl D. Metal plated plastic base intaglio printing cylinders and plates. 4,197,798, Cl. 101-153.000.
Bargigia, Gianangelo; Caporiccio, Gerardo; and Carniselli, Giuliano, to Montedison S.p.A. Propellant compositions for aerosols. 4,198,313, Cl. 252-305.000.
Barker, Robert B.; and Stack, James B., to International Business Machines Corporation. Optics contamination prevention utilizing a coanda air deflection system. 4,198,156, Cl. 355-30.000.
Barnhouse, James L., to Thompson, John C.; and Thompson, Craig W. Oil recovery via silicone introduction. 4,197,912, Cl. 166-305.00R.
Barrett, Gary L., to GSE, Inc. Bi-axial load cell. 4,197,736, Cl. 73-133.00R.
Barry, Richard; and Rubin, Howard, to Hoffmann-La Roche Inc. Theophylline magnesium salicylate. 4,198,507, Cl. 544-267.000.
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Barton, Stephen; and Sadler, Brian, to Fairchild Camera and Instrument Corporation. Television reference signal digital indentification system. 4,198,651, Cl. 358-21.00V.
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Merger, Franz; Strohmeyer, Max; Sandrock, Gerhard; Hohenschutz, Heinz; Schroff, Ludwig; and Nestler, Gerhard, 4,198,531, Cl. 568-793.000.
Rentzea, Costin; Pommer, Ernst-Heinrich; Mappes, Celia J.; and Zeeh, Bernd, 4,198,423, Cl. 424-273.00R.
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Baslow, Floyd M. Fabric wall covering system. 4,197,686, Cl. 52-273.000.
Bassetto, Mario F. Socket for fluorescent lamp. 4,198,108, Cl. 339-50.00R.
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Gyorgy, Ernst M.; Le Craw, Roy C.; and Wolfe, Raymond, 4,198,689, Cl. 365-8.000.
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Knowlton, Kenneth C., 4,198,158, Cl. 355-54.000.
Bellavoine, Robert, to De Pruines Iseco S. A. Cabinet for storing prepared meals on individual trays. 4,198,555, Cl. 219-10.55R.
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Benty, John L., to Sunbeam Corporation. Hair dryer. 4,198,558, Cl. 219-370.000.
Bentz, Jack, to Delta National, Inc. Concrete expansion joint forming structure. 4,198,176, Cl. 404-68.000.
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Bucalo, Louis. Method for structure for situating in a living body agents for treating the body. 4,197,846, Cl. 128-218.00P.

Buchanan, James B., to Du Pont de Nemours, E. I., and Company. Insecticidal carbamates. 4,198,427, Cl. 424-298.000.

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Butler, James R.; Turner, James E.; and Goodhart, Frank W., to Warner-Lambert Company. Removal of heparin from heparin-containing blood plasma samples using a triethylaminoethyl cellulose tablet. 4,198,314, Cl. 252-427.000.

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Carlock, John T., to Conoco, Inc. Iridium or rhodium trihalide polymer bound hydrogenation and hydroformylation catalyst. 4,198,353, Cl. 260-604.0HF.
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Carlsson, Lars C., to Tetra Pak International AB. Opening of containers. 4,197,949, Cl. 206-611.000.
Carlstrom, Per; Lundberg, Bo; and Persson, Gert, to Dynapac Maskin AB. Concrete floor finisher. 4,198,178, Cl. 404-112.000.
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Nieminen, Timo, 4,198,566, Cl. 250-439.00P.

Denlinger, George W.: *See*—
Cha, Charles L.; Denlinger, George W.; Pipkorn, David N.; and Spyrou, Elias, 4,198,643, Cl. 346-75.000.

Denso-Chemie Wedekind KG: *See*—
Baur, Fritz; and Stemmer, Gunther, 4,197,967, Cl. 222-190.000.

Deprez, Thomas A.; and Jaehn, Edwin C., to Gleason Works, The. Expandable arbor for holding a stack of elements. 4,198,066, Cl. 279-2.00R.

Deprez, Thomas A., to Gleason Works, The. Endless chain apparatus for forming spur and helical gears. 4,198,184, Cl. 409-262.000.

Deprez, Thomas A., to Gleason Works, The. Metalworking apparatus having improved means for supporting and guiding an endless chain. 4,198,185, Cl. 409-262.000.

Derjugin, Alexandr N.: *See*—
Bloshenko, Vladimir V.; Beizerov, Semen M.; Derjugin, Alexandr N.; and Ilin, Vladimir A., 4,197,900, Cl. 164-147.000.

DeRossett, Fred M., to Sunrich Mercantile Corp. Circular cake tray and cover. 4,197,940, Cl. 206-45.320.

Deryagina, Galina M.: *See*—
Konsetov, Vitaly V.; Kozlova, Galina I.; Orlova, Valentina G.; Dokukina, Ljudmila F.; Deryagina, Galina M.; Pavlova, Tatyana N.; Gavrichenkova, Eleonora A.; and Vasilieva, Natalia P., 4,198,383, Cl. 422-134.000.

De Simone, Renato, to Etablissement Viridis. Novel hypocholesterolemic resin. 4,198,395, Cl. 424-79.000.

DeSoto, Inc.: *See*—
Sekmakas, Kazys; and Shah, Raj, 4,198,495, Cl. 525-328.000.

Desserre, Jean: *See*—
Lazzari, Jean P.; and Desserre, Jean, 4,198,667, Cl. 360-123.000.

Dethmers Manufacturing Company: *See*—
Lammers, Walter, 4,197,999, Cl. 239-166.000.

DeVitto, Ronald R.: *See*—
Raudys, Vytas A.; and DeVitto, Ronald R., 4,197,983, Cl. 229-65.000.

DeVlieg, Garrett H., to Boeing Company, The. Automatic system pressure shut off valve for anti-skid control system. 4,198,102, Cl. 303-92.000.

Diana, Guy D.: *See*—
Collins, Joseph C.; and Diana, Guy D., 4,198,436, Cl. 424-330.000.

Dienst, Carl S.: *See*—
Citti, James E.; and Dienst, Carl S., 4,198,437, Cl. 426-104.000.

Dieterich, Dieter: *See*—
Scholl, Hans-Joachim; Dieterich, Dieter; Markusch, Peter; and Welte, Rainer, 4,198,487, Cl. 521-122.000.

Dietrich, Darrel R., to Cavalier Products, Inc. Walking beam shrink tunnel apparatus. 4,198,560, Cl. 219-388.000.

Dietrich, Walter; and Bauer, Manfred, to Robert Bosch GmbH. Method and apparatus for opening and handling folded boxes. 4,197,790, Cl. 93-53.00M.

Dills, Raymond L., to General Electric Company. Combination oven fully utilizing the capability of a limited power source. 4,198,553, Cl. 219-10.55B.

Di Salvo, Francis J., Jr.; and Murphy, Donald W., to Bell Telephone Laboratories, Incorporated. Nonaqueous secondary cell using metal oxide electrodes. 4,198,476, Cl. 429-194.000.

Dispenser Corporation: *See*—
Maran, Victor J., 4,197,884, Cl. 141-383.000.

Dittler Brothers, Inc.: *See*—
Hartman, Robert; Hopkins, Thomas E.; and Goldstein, Robert P., 4,197,984, Cl. 229-74.000.

Diversified Insulation, Inc.: *See*—
Ward, Bruce K., 4,197,683, Cl. 52-92.000.

Dixon, Carole M.; and Lawler, Edward B., to American Cyanamid Company. Processes for preparing textile finishing composition and finishing textile materials therewith. 4,198,462, Cl. 428-290.000.

Dixon, Frederick L.; Fox, Leonard P.; and Trachman, Edward G., to RCA Corporation. Wiping apparatus and method for a high-density information record. 4,198,060, Cl. 274-47.000.

Djerassi, Isaac. Method and apparatus for collecting transfusable granulocytes. 4,197,847, Cl. 128-214.00R.

Dobler, Peter: *See*—
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; Brombach, Heinz; and Woppel, Dieter, 4,198,007, Cl. 242-56.900.

Dr. E. Fresenius Chemisch Pharmazeutische Industrie KG Apparatebau KG: *See*—
Schindler, Johannes G.; and Schal, Wilfried, 4,197,852, Cl. 128-635.000.

Dr. Ing. h. c. F. Porsche Aktiengesellschaft: *See*—
Fuhrmann, Ernest; and Lehmann, Ulrich, 4,197,711, Cl. 60-602.000.

Dogliotti, Amilcare, to P. Ferrero & C. S.p.A. Shipping and displaying device for small articles. 4,197,939, Cl. 206-44.00R.

Doherty, Thomas E.: *See*—
Amberg, Stephen W.; and Doherty, Thomas E., 4,197,948, Cl. 206-520.000.

Dokukina, Ljudmila F.: *See*—
Konsetov, Vitaly V.; Kozlova, Galina I.; Orlova, Valentina G.; Dokukina, Ljudmila F.; Deryagina, Galina M.; Pavlova, Tatyana N.; Gavrichenkova, Eleonora A.; and Vasilieva, Natalia P., 4,198,383, Cl. 422-134.000.

Dominion Auto Accessories Limited: *See*—
Urbanek, Karel, 4,198,027, Cl. 248-634.000.

Donigan, Carolyn L.; MacMillan, Deane B.; and Srock, James H. Capacitor assembly. 4,198,671, Cl. 361-306.000.

Dorset Industrial Chemicals Ltd.: *See*—
Flaherty, Edwin H., 4,198,267, Cl. 162-158.000.

Douglas, George H.: *See*—
Condouris, George A.; Yelnosky, John; Riley, Richard L.; Won, Chong M.; Douglas, George H.; and Studt, William L., 4,198,408, Cl. 424-249.000.
Nuss, George W., Jr.; Santora, Norman J.; and Douglas, George H., 4,198,349, Cl. 260-566.00F.
Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; Patel, Dahyabhai M.; Won, Chong M.; and Alioto, Ronald L., 4,198,409, Cl. 424-249.000.

Doumas, John J.; Molof, Alan H.; Raymond, Gordon H.; and Wikstrom, Lee, to Consolidated Foods Corporation. Process and apparatus for treating drinking water. 4,198,296, Cl. 210-29.000.

Dow Chemical Company, The: *See*—
Birkelbach, Donald F.; and Knight, George W., 4,198,315, Cl. 252-429.00B.
Evani, Syamalarao; and Killat, George R., 4,198,269, Cl. 162-164.0EP.

Dow Corning Corporation: *See*—
Birdsall, Arthur A.; Fitzgerald, John K.; Jones, David P.; and Polmanteer, Keith E., 4,198,131, Cl. 351-160.00R.
Groenhof, Eugene D., 4,198,190, Cl. 417-55.000.
Seger, Ronald G.; Trombley, Wayne E.; and Jacobson, Lawrence R., 4,198,132, Cl. 351-160.00R.

Dow, Judith A.; Sentementes, Thomas J.; Homer, Horace H.; and Shaffer, John W., to GTE Sylvania Incorporated. Lamp with protective coating and method of applying same. 4,198,199, Cl. 431-360.000.

Drabert Sohne, Firma: *See*—
Riedel, Dieter, 4,197,663, Cl. 38-3.000.

Dragerwerk Aktiengesellschaft: *See*—
Hartwig, Hans-Joachim, 4,197,844, Cl. 128-205.230.

Drake, Kenneth; Hoy, Kenneth L.; and Seefried, Carl G., Jr., to Union Carbide Corporation. Polymer-polyols and polyurethanes based thereon. 4,198,488, Cl. 521-137.000.

Dreier, Richard L.: *See*—
Young, John L., Sr.; and Dreier, Richard L., 4,197,729, Cl. 72-52.000.

Dresser Industries, Inc.: *See*—
Berriman, Lester P.; Englert, Robert D.; and Armstrong, Kenneth R., 4,198,357, Cl. 261-44.00B.

Dual Gebruder Steidinger: *See*—
Schamberger, Jorg; and Zimmermann, Heinrich, 4,198,058, Cl. 274-37.000.

Ducommun, Georges. Device for aiding persons having a speech handicap. 4,198,542, Cl. 179-1.0AL.

Dudek, Max; and Tieke, Otto, to Wintershall Aktiengesellschaft. Apparatus for producing petroleum coke calcinate. 4,198,273, Cl. 202-136.000.

Dulondel, Jacques: *See*—
de la Messuziere, Philippe; and Dulondel, Jacques, 4,198,033, Cl. 254-159.000.

Dunham-Bush, Inc.: *See*—
Shaw, David N., 4,197,719, Cl. 62-324.000.

Dunn, Robert E. Electrostatic-vacuum record cleaning apparatus. 4,198,061, Cl. 274-47.000.

Dunstan, Phillip E.; and McConnell, Charles H., to Boeing Company, The. Linear induction drive system for accelerating and decelerating moving walkway. 4,197,933, Cl. 198-334.000.

Du Pont de Nemours, E. I., and Company: *See*—
Buchanan, James B., 4,198,427, Cl. 424-298.000.
Burckel, William G., deceased, 4,198,494, Cl. 525-432.000.
Cherkofsky, Saul C.; and Sharpe, Thomas R., 4,198,421, Cl. 424-273.00R.
Hamlin, James S., 4,198,153, Cl. 354-325.000.
Held, Robert P., 4,198,236, Cl. 430-306.000.
Pazos, Jose F., 4,198,242, Cl. 430-286.000.
Williamson, Thomas D., 4,197,622, Cl. 28-267.000.

Dussel, Wilhelm, to BASF Aktiengesellschaft. Continuous testing of the thickness of the enamel coating of electric wires. 4,197,651, Cl. 33-143.00L.

Dutcher, Daniel P., to Champion International Corporation. Partitioned carton. 4,197,979, Cl. 229-29.00D.

Dynamit Nobel Aktiengesellschaft: *See*—
Schmidt, Hans-Georg, 4,198,341, Cl. 260-347.500.
Schmidt, Hans-Georg, 4,198,343, Cl. 260-347.500.

Dynamit Nobel Atkiengesellschaft: *See*—
Schmidt, Hans-Georg, 4,198,342, Cl. 260-347.500.

Dynapac Maskin AB: *See*—
Carlstrom, Per; Lundberg, Bo; and Persson, Gert, 4,198,178, Cl. 404-112.000.

Dynasciences Corporation: *See*—
Homer, Charles J., 4,198,482, Cl. 435-284.000.

E G and G, Inc.: *See*—
Clifford, Peter J., 4,198,702, Cl. 367-88.000.

E. R. Squibb & Sons, Inc.: *See*—
Losee, Kathryn A.; and Bernstein, Jack, 4,198,509, Cl. 544-388.000.
Ondetti, Miguel A.; and Condon, Michael E., 4,198,515, Cl. 546-326.000.
Ondetti, Miguel A., 4,198,517, Cl. 548-344.000.
Vogt, B. Richard; and Simpkins, Ligaya M., 4,198,412, Cl. 424-251.000.
Wade, Peter C., 4,198,422, Cl. 424-273.00B.

Eastman Kodak Company: *See*—
Frank, Lee F.; and Lee, James K., 4,198,140, Cl. 354-50.000.

Eaton, James R., Jr.; Sodini, Charles G.; and Walker, Laurence G., to Hewlett-Packard Company. X-Y Addressable memory. 4,198,694, Cl. 365-149.000.

Ebara, Katsuya: *See*—
Ogawa, Toshio; Ebara, Katsuya; and Takahashi, Sankichi, 4,198,293, Cl. 210-23.00H.

Ebauches, S.A.: *See*—
Cognard, Jacques, 4,198,124, Cl. 350-357.000.

Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, to Citizen Watch Co., Ltd. Input circuit for portable electronic devices. 4,198,579, Cl. 307-247.00A.

Ecnpk Po Biologia I Mediko-Biologichni Problemi Pri Ban: *See*—
Golovinski, Evgeni V.; Alexiev, Boris V.; Spassov, Alexander V.; Stoev, Stoycho B.; Maneva, Lilyana S.; Emanuilov, Emanuil A.; Stoychev, Tzanko S.; and Angelov, Ivan I., 4,198,433, Cl. 424-320.000.

Econo Fuel Systems, Inc.: *See*—
Mahoney, Fred G.; and Harpman, Webster B., 4,197,819, Cl. 123-25.00B.

EDC/Enviro Development Co., Inc.: *See*—
Zuckerman, Matthew M.; and Hamer, Leslie C., 4,198,298, Cl. 210-65.000.

Edouard Dubied & Cie. Societe Anonyme: *See*—
Cole-Petit, Jackie; and Kohler, Fritz, 4,197,722, Cl. 66-75.200.

Edwards, John A.; and Alvarez, Francisco S., to Syntex (U.S.A.) Inc. 6 Alpha, 6 beta-difluoro-etianic acid derivatives. 4,198,404, Cl. 424-243.000.

Edwards, John R., to Lever Brothers Company. Packaging container. 4,197,962, Cl. 220-461.000.

Edwards, Philip N., to Imperial Chemical Industries Limited. Process for the manufacture of p-hydroxyphenyl acetic acid. 4,198,526, Cl. 562-478.000.

Edwards, Philip N.: *See*—
Copeland, Robert J.; and Edwards, Philip N., 4,198,523, Cl. 562-470.000.

Egger, Richard L.: *See*—
Harting, Darrell R.; and Egger, Richard L., 4,197,753, Cl. 73-766.000.

Ehedy, Gustav; Kemter, Heinz; Ponitz, Wilfried; Ehrlich, Engelbert; Politze, Walter; Scholtis, Walter; and Wunsch, Wolfgang, to VEB Wirkmaschinenbau Karl-Marx-Stadt. Stitch bonded fabrics, method and apparatus for making the same. 4,197,723, Cl. 66-85.00A.

Ehrlich, Engelbert: *See*—
Ehedy, Gustav; Kemter, Heinz; Ponitz, Wilfried; Ehrlich, Engelbert; Politze, Walter; Scholtis, Walter; and Wunsch, Wolfgang, 4,197,723, Cl. 66-85.00A.

Eiff, Peter, to Bruderhaus Maschinen GmbH. Cutting mill. 4,198,005, Cl. 241-73.000.

Eilingsfeld, Heinz: *See*—
Elser, Wolfgang; Eilingsfeld, Heinz; and Meyer, Guenter, 4,198,205, Cl. 8-39.00R.

Eisenwerk-Gesellschaft Maximilianshutte mbH: *See*—
Brotzmann, Karl; and Fassbinder, Hans-Georg, 4,198,230, Cl. 75-60.000.

Eistert, Theodor; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Schmidt, Gerhard; and Nather, Lothar, to VEB Kombinat

Fortschritt Landmaschinen. Position detector for row-crop harvester. 4,197,690, Cl. 56-10.200.

Eistetter, Klaus; and Kley, Hans-Peter, to Byk Gulden Lomberg Chemische Fabrik GmbH. Substituted 1-phenyl-2-pyrrolidin-2-yl-ethanols, their synthesis, their use and their compositions. 4,198,424, Cl. 424-274.000.

Eli Lilly and Company: *See—*
Kornfeld, Edmund C.; and Bach, Nicholas J., 4,198,415, Cl. 424-258.000.

Elliott, Guy R. B.; and McDaniel, Milton W. Mobile, waterless, coal and mineral separating method. 4,198,289, Cl. 209-11.000.

Elliott, Myron A., to United States of America, Navy. Generation of low frequency sound under water. 4,198,706, Cl. 367-148.000.

Elmore, Ernest L.: *See—*
Mills, Edwin R.; and Elmore, Ernest L., 4,198,562, Cl. 219-505.000.

Elser, Wolfgang; Eilingsfeld, Heinz; and Meyer, Guenter, to BASF Aktiengesellschaft. Triazinyl-anthraquinone dye formulations for cellulose or cellulosic fibrous material. 4,198,205, Cl. 8-39.00R.

Elssner, Egon H. Photodetector timer network. 4,198,563, Cl. 250-214.0AL.

Emanuilov, Emanuil A.: *See—*
Golovinski, Evgeni V.; Alexiev, Boris V.; Spassov, Alexander V.; Stoev, Stoycho B.; Maneva, Lilyana S.; Emanuilov, Emanuil A.; Stoychev, Tzanko S.; and Angelov, Ivan I., 4,198,433, Cl. 424-320.000.

Emerson Electric Co.: *See—*
Plasko, Emil R., 4,197,634, Cl. 29-622.000.

EMI Limited: *See—*
Pearce, Ralph R., 4,197,989, Cl. 235-493.000.
Williams, Anthony M., 4,197,755, Cl. 74-84.00R.

Eneroth, Peter; and Wladimiroff, Wladimir. Method and apparatus for discrimination between scattered excitation radiation and low level fast decaying fluorescent radiation. 4,198,567, Cl. 250-459.000.

Eng, Kai Yin, to RCA Corporation. Redundancy system with eight devices for five channels. 4,198,611, Cl. 333-105.000.

Engelhard Minerals & Chemicals Corporation: *See—*
Boyum, Asmund A., 4,197,701, Cl. 60-39.060.

Engelking, Rolf: *See—*
Weber, Otto; Keck, Volkmar; and Engelking, Rolf, 4,197,922, Cl. 181-229.000.

Englehardt, William H.: *See—*
Bracha, Marion F.; and Englehardt, William H., 4,198,051, Cl. 273-121.00A.

Englert, Robert D.: *See—*
Berriman, Lester P.; Englert, Robert D.; and Armstrong, Kenneth R., 4,198,357, Cl. 261-44.00B.

Enomoto, Hiroshi: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; and Yagi, Masahiro, 4,198,481, Cl. 435-122.000.

Enomoto, Satoru; Asano, Kiro; Tamura, Humio; and Tanaka, Hiromitsu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Prostaglandine derivatives. 4,198,405, Cl. 424-242.000.

Ensco, Inc.: *See—*
Cantor, Clarence, 4,198,164, Cl. 356-375.000.

Envall, Bjorn E. A.: *See—*
Ilhage, Bertil G.; and Envall, Bjorn E. A., 4,198,674, Cl. 362-80.000.

Erdmannsdorfer, Hans, to Filterwerk Mann & Hummel GmbH. Protective air filter intake hood with air deflecting intake screen. 4,198,217, Cl. 55-385.00F.

Erhard & Leimer KG: *See—*
Mair, Franz, 4,197,621, Cl. 26-98.000.

Erickson, John W., to Kobe, Inc. Gas separation apparatus. 4,198,218, Cl. 55-408.000.

Erikson, Charles M.: *See—*
Lerner, Melvin; Hood, Lyal V.; Rommel, Marjorie A.; Pettitt, Bruce C.; and Erikson, Charles M., 4,198,208, Cl. 23-232.00R.

Erlichman, Irving, to Polaroid Corporation. Method and apparatus for releasing processing fluid from a fluid applicator by application of thermal energy. 4,198,135, Cl. 352-130.000.

Ernest, Robert P., to Ford Motor Company. Method of casting a low weight reciprocating engine. 4,197,899, Cl. 164-34.000.

Esaki, Leo, to United States of America, Army. Tunnel diode. 4,198,644, Cl. 357-12.000.

Esmonde, Roderic A.; and DeBellis, Frederick W., to Bethlehem Fabricators, Inc. Collapsible reel. 4,198,012, Cl. 242-115.000.

Estel, Heinz: *See—*
Muth, Hans-Albrecht; Stark, Rudolf; Marwitz, Hans-Gunther v. d.; Hundemer, Peter; Estel, Heinz; and Reissig, Dirk, 4,198,093, Cl. 296-78.100.

Etablissement Viridis: *See—*
De Simone, Renato, 4,198,395, Cl. 424-79.000.

Etat Francais represented by the Delegue General pour l'Armement: *See—*
Cluzel, Philippe H.; Quivy, Michel G.; and Tocquet, Bernard, 4,197,920, Cl. 181-175.000.

Ethyl Corporation: *See—*
Hornbaker, Edwin D.; and Li, Hsueh M., 4,198,381, Cl. 423-300.000.

Ethyl Development Corporation: *See—*
Oltman, Eugene W.; and Hills, Robert N., 4,197,954, Cl. 215-1.00C.

Ethyl Products Company: *See—*
Luenser, Werner R., 4,197,955, Cl. 215-252.000.

Evani, Syamalarao; and Killat, George R., to Dow Chemical Company, The. Quaternary ammonium salts of epihalohydrin polymers as additives for fibrous cellulosic materials. 4,198,269, Cl. 162-164.0EP.

Everitt, Delmar K.: *See—*
Goldfarb, Adolph E.; Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., 4,198,050, Cl. 273-120.00R.
Goldfarb, Adolph E.; and Everitt, Delmar K., 4,198,068, Cl. 280-1.10R.

Evkin, Ivan F.: *See—*
Shafranovsky, Alexandr V.; Ruchinsky, Vitaly R.; Olevsky, Viktor M.; Gavrilin, Vladimir P.; Chubukov, Vladimir K.; Gromoglasova, Valentina N.; Bushev, Vladimir S.; Baskov, Jury A.; Kurkovskaya, Violetta V.; Gurkov, Boris A.; and Evkin, Ivan F., 4,198,361, Cl. 261-89.000.

Ewing, Lloyd; and Bykowski, Michael J., to Water Pollution Control Corporation. Microscreen method and apparatus. 4,198,299, Cl. 210-77.000.

Extrados Company Limited: *See—*
Svirklys, Ferdinand M., 4,198,034, Cl. 256-65.000.

Exxon Production Research Company: *See—*
Williams, Robert E., 4,198,300, Cl. 210-170.000.

Exxon Research & Engineering Co.: *See—*
Brunner, Stanley N.; and Bartley, George S., 4,198,677, Cl. 364-571.000.
Matthias, Dan W.; and Thornton, Richard D., 4,198,582, Cl. 310-12.000.
Smith, Hosea E., 4,197,907, Cl. 165-76.000.
Worley, Arthur C.; and Zboray, James A., 4,198,210, Cl. 48-77.000.

Ezekiel, Frederick D.; and Aisenberg, Sol, to Gulf & Western Industries, Inc. Automatic air deflation regulator for use in an instrument for measuring blood pressure. 4,198,031, Cl. 251-117.000.

Ezer, Elemer; Szporny, Laszio; Forgach, Lilla; Palosi, Eva; Cholnoky, Eszter; Karpati, Egon; Hajos, Gyorgy; Hortobagyi, Gyozo; and Gidai, Katalin, to Richter Gedeon Vegyeszeti Gyar Rt. Antiphlogistic composition of phenylbutozone and alkali salicylate and method of treatment. 4,198,402, Cl. 424-232.000.

Ezure, Yoji: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; and Yagi, Masahiro, 4,198,481, Cl. 435-122.000.

Facet Enterprises, Inc.: *See—*
Mortensen, Harold R., 4,197,885, Cl. 192-42.000.

Fachbach, Heinz; Thien, Gerhard; and Kirchweger, Karl, to Hans List. Internal combustion engine having a noise-suppressing encapsulation. 4,197,826, Cl. 123-198.00E.

Fainzilberg, Leonid S., to Institut Kibernetiki Akademii Nauk Ukrainskoi SSR. Method and device for discriminating thermal effect of phase transformation of metals and alloys in the process of their cooling. 4,198,679, Cl. 364-497.000.

Fairchild Camera and Instrument Corporation: *See—*
Barton, Stephen; and Sadler, Brian, 4,198,651, Cl. 358-21.00V.
Berry, Robert, 4,198,649, Cl. 357-50.000.
Ong, Warren R.; and Ho, Walford, 4,198,698, Cl. 365-226.000.

Falcone, Basil J.: *See—*
Spiro, Earl M.; and Falcone, Basil J., 4,198,455, Cl. 428-126.000.

Falconer, Errol L.: *See—*
Kirchnerova, Jitka; and Falconer, Errol L., 4,198,253, Cl. 149-44.000.

Fantetti, Giuseppe. Cover for toilet bowls. 4,197,596, Cl. 4-236.000.

Faris, Sadeg M., to International Business Machines Corporation. Loop decoder for Josephson memory arrays. 4,198,577, Cl. 307-212.000.

Farmer, Robert F.: *See—*
Sokol, Phillip E.; and Farmer, Robert F., 4,198,445, Cl. 427-140.000.

Farmitalia Carlo Erba S.p.A.: *See—*
Gandolfi, Carmelo; Pellegate, Renato; Faustini, Franco; and Fumagalli, Angelo, 4,198,430, Cl. 424-305.000.

Farr, Thomas G.: *See—*
Lane, Derek; Farr, Thomas G.; and Galles, Stuart L., 4,197,656, Cl. 33-414.000.

Fasana, Robert R.: *See—*
Garrett, Scott T.; Fasana, Robert R.; and Rudzena, William L., 4,197,848, Cl. 128-247.000.

Fassbinder, Hans-Georg: *See—*
Brotzmann, Karl; and Fassbinder, Hans-Georg, 4,198,230, Cl. 75-60.000.

Faunce, Frank R. Sodium dihydrogen phosphate enhanced dentifrice composition. 4,198,394, Cl. 424-52.000.

Faustini, Franco: *See—*
Gandolfi, Carmelo; Pellegate, Renato; Faustini, Franco; and Fumagalli, Angelo, 4,198,430, Cl. 424-305.000.

Fawcett, Sherwood L.; and Anno, James N., to Battelle Development Corporation. Heat pump. 4,197,715, Cl. 62-115.000.

Federspiel, Joseph A., to FMC Corporation. Seat suspension system. 4,198,092, Cl. 296-65.00R.

Fehr, David A.: *See—*
Knepp, Wayne A.; and Fehr, David A., 4,198,175, Cl. 403-191.000.

Feldbaumer, Erich; Loquenz, Heinz; and Sandri, Alfred, to Waagner-Biro Aktiengesellschaft; and Chemiefaser Lenzing Aktiengesellschaft. Reduction of sodium sulfate to sodium sulfide. 4,198,385, Cl. 423-566.000.

Fellus, Victor M. Apparatus for emitting high-frequency electromagnetic waves. 4,197,851, Cl. 128-422.000.

Ferguson, Ronald W.: *See—*
Rayfield, Wilson P.; Preston, Norman H.; Ferguson, Ronald W.; Dear, Frederick H.; Korytkowski, Henry M.; Muster, Frank L.; and Karns, Ward L., 4,197,797, Cl. 101-90.000.

Ferm, Richard L.; and Campbell, Robert W., to Chevron Research Company. Process for producing concrete structures of high strength. 4,198,245, Cl. 106-97.000.
Ferracini, Flavio, to Indesit Industria Elettrodomestici Italiana S.p.A. Supply circuit. 4,198,660, Cl. 358-190.000.
Ferrari, Giorgio, to Simes Societa Italiana Medicinali e Sintetici S.p.A. Process for the preparation of polyhydroxylated steroids, lysergol and ergolinic alkaloids. 4,198,344, Cl. 260-397.250.
Ferraro, Angelo, to Tele/Resources. Pulse circuit for two wire electronic PABX stations. 4,198,547, Cl. 179-16.00H.
Fessler, Herman S., to Cornelius Company, The. Fastener latch. 4,198,083, Cl. 292-205.000.
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Laurie, William A., 4,198,364, Cl. 264-226.000.
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Tytell, Alfred A.; Scattergood, Edgar; and Field, Arthur K., 4,198,479, Cl. 435-2.000.
Fieldcrest Mills, Inc.: *See*—
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Fields, Ellis K., to Standard Oil Company (Indiana). Amination/demethylation process. 4,198,350, Cl. 260-580.000.
Filterwerk Mann & Hummel GmbH: *See*—
Erdmannsdorfer, Hans, 4,198,217, Cl. 55-385.00F.
Filtrol Corporation: *See*—
Alafandi, Hamid; and Stamires, Dennis, 4,198,319, Cl. 252-455.00Z.
Alafandi, Hamid; and Stamires, Dennis, 4,198,321, Cl. 252-455.00Z.
Finger, Hansjorg. Fluid-tight watch case. 4,197,698, Cl. 368-291.000.
Fink, George: *See*—
Hudson, Derek; Sharpe, Robert; Szelke, Michael; MacIntyre, Iain; and Fink, George, 4,198,398, Cl. 424-177.000.
Firestone Tire & Rubber Company, The: *See*—
Halasa, Adel F.; and Hall, James E., 4,198,496, Cl. 526-115.000.
Johnson, Charles R., 4,198,265, Cl. 159-47.00R.
Firmenich SA: *See*—
Demole, Edouard P., 4,197,862, Cl. 131-2.000.
Fisons Limited: *See*—
Gillings, Christopher; and Palmer, John H., 4,198,397, Cl. 424-83.000.
Fitch, Robert H.: *See*—
Kurtz, Bruce E.; and Fitch, Robert H., 4,198,277, Cl. 204-98.000.
Fitzgerald, John K.: *See*—
Birdsall, Arthur A.; Fitzgerald, John K.; Jones, David P.; and Polmanteer, Keith E., 4,198,131, Cl. 351-160.00R.
Flaherty, Edwin H., to Dorset Industrial Chemicals Ltd. Improved pulp sheet formation. 4,198,267, Cl. 162-158.000.
Flinn, Joseph B. Linear marking device. 4,197,649, Cl. 33-488.000.
Flippin, James S., to J. I. Case Company. Subterranean plow blade. 4,197,918, Cl. 172-699.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., to American Cyanamid Company. 15-Deoxy-16-hydroxy-16-vinyl and cyclopropyl substituted prostanoic acids and congeners. 4,198,521, Cl. 560-118.000.
Fluid Controls, Inc.: *See*—
Merkel, Stephen F., 4,197,871, Cl. 137-102.000.
FMC Corporation: *See*—
Aterianus, John S.; and Crawford, Donald C., 4,197,935, Cl. 198-460.000.
Federspiel, Joseph A., 4,198,092, Cl. 296-65.00R.
Mezei, George A., 4,198,076, Cl. 285-18.000.
Fonda, James B.; Swanson, Howard B., Jr.; and Howard, Dennis D., to Lord Corporation. Damage-preventive coatings. 4,198,200, Cl. 431-360.000.
Fondriest, F. Frederick, to Standard Oil Company. Method of mining. 4,198,097, Cl. 299-11.000.
Ford Aerospace & Communications Corporation: *See*—
LaFever, Clifford E.; and Washburn, William J., 4,197,801, Cl. 102-38.0CC.
Ford, Mark R., Jr.: *See*—
Carberg, William G.; and Ford, Mark R., Jr., 4,197,990, Cl. 236-1.00R.
Ford Motor Company: *See*—
Ernest, Robert P., 4,197,899, Cl. 164-34.000.
Giardini, Dante S., 4,197,996, Cl. 239-87.000.
Wu, Hai; and Heintz, Walter K., 4,197,997, Cl. 239-102.000.
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Fouad, M. Taher A., to Kelatron Pharmaceutical Division of Intermountain Laboratories Inc. Trace element composition for iron deficiency anemia. 4,198,399, Cl. 424-177.000.
Fournel, Francis; and Soussan, Salomon, to Rhone-Progil. Vertical autoclave for bulk polymerization of vinyl chloride based polymers and copolymers. 4,198,376, Cl. 422-135.000.
Fowler, Cleon R. Continuous conveyor belt cleaner. 4,197,936, Cl. 198-498.000.
Fox, Leonard P.: *See*—
Dixon, Frederick L.; Fox, Leonard P.; and Trachman, Edward G., 4,198,060, Cl. 274-47.000.
France, James R.; Baiocchi, Fred; Murphy, Lawrence J.; and Van Haften, John L., to C. J. Patterson Company. Skin conditioning toilet bar. 4,198,311, Cl. 252-117.000.
Francis, Orville B.: *See*—
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Frank, Lee F.; and Lee, James K., to Eastman Kodak Company. Piezoelectric camera shutter. 4,198,140, Cl. 354-50.000.
Fraser, Douglas S., to FTS Systems, Inc. Tissue freeze dryer. 4,197,658, Cl. 34-92.000.
Fredericksen, Thomas M.: *See*—
Connolly, Joseph J., Jr.; Fredericksen, Thomas M.; and Redfern, Thomas P., 4,198,622, Cl. 340-347.0DA.
Freeman, William R., Jr.: *See*—
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Frehn, Fritz, to Thyssen Edelstahlwerke AG. Method for the manufacture of tools, machines or parts thereof by composite sintering. 4,198,233, Cl. 75-203.000.
Frei, Alfred; Moser, Helmut; Schoefberger, Georg; and Schweizer, August, to Sandoz Ltd. Process for producing colored paper using granulated dye compositions. 4,198,268, Cl. 162-162.000.
Freiberg, Bernd-Rainer; Gehl, Wilfried; Liebe, Jurgen; and Muschelknautz, Horst, to Voith Turbo GmbH & Co., KG. Temperature monitoring arrangement for a moving component. 4,197,742, Cl. 73-362.0CP.
Freller, Helmut; and Titze, Gunther, to Siemens Aktiengesellschaft. Method for the preparation of thin films of high-temperature-resistant metals such as tungsten, molybdenum, rhenium or osmium. 4,198,449, Cl. 427-255.300.
Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, to Vockenhuber, Karl; and Hauser, Raimund. Cine camera. 4,198,133, Cl. 352-27.000.
Frick, Egon, to Orenstein & Koppel AG. Double slewing crane construction. 4,197,953, Cl. 212-47.000.
Frick, Roger L., to Rosemount Inc. Split bar vortex shedding flowmeter. 4,197,739, Cl. 73-194.0VS.
Frierdich, Richard D.: *See*—
Goldfarb, Adolph E.; Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., 4,198,050, Cl. 273-120.00R.
Frisch, Kurt C.; Tummers, Daniel M. J.; and Te Nijenhuis, Anne, to Stamicarbon, B.V. Preparation of tris-(β-hydroxypropyl) isocyanurate. 4,198,505, Cl. 544-221.000.
FTS Systems, Inc.: *See*—
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Fugi Mfg. Co., Ltd.: *See*—
Asai, Koichi; and Kawada, Tousuke, 4,197,638, Cl. 29-741.000.
Fuhring, Heinrich, to Bowe Maschinenfabrik GmbH. Suction apparatus for extracting liquids from a web. 4,197,609, Cl. 15-306.00A.
Fuhrmann, Ernest; and Lehmann, Ulrich, to Dr. Ing. h. c. F. Porsche Aktiengesellschaft. Exhaust driven turbocharger for an internal combustion engine. 4,197,711, Cl. 60-602.000.
Fuji Photo Film Co., Ltd.: *See*—
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Nahara, Akira; Ono, Yoshihiro; Namiki, Tomizo; Harada, Shigeo; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,198,237, Cl. 430-415.000.
Oishi, Kengo; and Suzuki, Osamu, 4,198,014, Cl. 242-199.000.
Yoneyama, Masakazu; Yamaguchi, Jiro; and Mikami, Takeshi, 4,198,478, Cl. 430-449.000.
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Fujino, Shoji: *See*—
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Fujioka, Shigeji, to Grill Misono Co., Ltd. Combination set of a pan and a cookstove. 4,198,561, Cl. 219-433.000.
Fujita, Yutaka: *See*—
Sato, Hisato; Takatsu, Haruyoshi; and Fujita, Yutaka, 4,198,312, Cl. 252-299.000.
Fujitsu Limited: *See*—
Aoyama, Keizoh; Shimada, Hiroshi; and Noguchi, Eiji, 4,198,700, Cl. 365-230.000.
Oguchi, Takuro; and Masuda, Hajime, 4,198,600, Cl. 455-15.000.
Yamashita, Hideo; Andoh, Shizuo; and Shinoda, Tsutae, 4,198,585, Cl. 313-218.000.
Fukui, Takeo, to Honda Giken Kogyo Kabushiki Kaisha. Piston ring for internal combustion engine. 4,198,065, Cl. 277-217.000.
Fukunaga, Yukio: *See*—
Kamijo, Ken; and Fukunaga, Yukio, 4,198,011, Cl. 242-107.700.
Fukushima, Isao, to Hitachi, Ltd. Signal holding circuit. 4,198,541, Cl. 179-1.00P.
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Furr, Glynn R., Jr., to International Business Machines Corporation. Segmented storage logging and controlling for partial entity selection and condensing. 4,198,681, Cl. 364-900.000.
Furukawa Electric Co., Ltd., The: *See*—
Matsui, Kazumi; Takasue, Takashi; and Iwasaki, Masami, 4,197,934, Cl. 198-472.000.

Futaba Denshi Kogyo K.K.: *See*—
Takagi, Toshinori; and Morimoto, Kiyoshi, 4,197,814, Cl. 118-726.000.
G. D. Searle & Co.: *See*—
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Gacki, Leonard W.; and Daly, Robert E., to Picker Corporation. Containerized fluid supply for fluid mixing and dispensing system. 4,197,942, Cl. 206-219.000.
Gadzhi-Kasumov, Veli S. M. O.: *See*—
Aliev, Vagab S.; Rizaev, Ramiz G. K. O.; Gadzhi-Kasumov, Veli S. M. O.; Ter-Sarkisov, Beniamin G.; Talyshinsky, Rashid M.; Pilaeva, Lidia P.; and Seifullaeva, Zhalya M. K., 4,198,536, Cl. 585-626.000.
GAF Corporation: *See*—
Nahta, Roop C., 4,198,316, Cl. 252-354.000.
Gaffre, Michel, to U.S. Philips Corporation. Method of making polychromatic monolithic electroluminescent assembly utilizing epitaxial deposition of graded layers. 4,198,251, Cl. 148-175.000.
Galles, Stuart L.: *See*—
Lane, Derek; Farr, Thomas G.; and Galles, Stuart L., 4,197,656, Cl. 33-414.000.
Gamblin, Rodger L., to Mead Corporation, The. Ink jet printer having interlaced print scheme. 4,198,642, Cl. 346-75.000.
Gandolfi, Carmelo; Pellegate, Renato; Faustini, Franco; and Fumagalli, Angelo, to Farmitalia Carlo Erba S.p.A. 13,14-Dehydro-11-deoxyprostaglandis. 4,198,430, Cl. 424-305.000.
Garrett Corporation, The: *See*—
Mannatt, Scott A., 4,198,213, Cl. 55-16.000.
Parker, Warde L.; and Riple, James C., 4,197,699, Cl. 60-39.030.
Garrett, Scott T.; Fasana, Robert R.; and Rudzena, William L., to Baxter Travenol Laboratories, Inc. Closed urinary irrigation site. 4,197,848, Cl. 128-247.000.
Gatten, Ronald A.; and Neves, John C., to American Optical Corporation. Cathode ray tube burn-in prevention apparatus. 4,198,661, Cl. 358-242.000.
Gauselmann, Paul, to ADP - Automaten GmbH. Slot machine. 4,198,052, Cl. 273-143.00R.
Gavrichenkova, Eleonora A.: *See*—
Konsetov, Vitaly V.; Kozlova, Galina I.; Orlova, Valentina G.; Dokukina, Ljudmila F.; Deryagina, Galina M.; Pavlova, Tatyana N.; Gavrichenkova, Eleonora A.; and Vasilieva, Natalia P., 4,198,383, Cl. 422-134.000.
Gavrilin, Vladimir P.: *See*—
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Gay, Charles F., to Atlantic Richfield Company. Solar cell manufacture. 4,198,262, Cl. 156-662.000.
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Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,198,441, Cl. 427-2.000.
Gehl, Wilfried: *See*—
Freiberg, Bernd-Rainer; Gehl, Wilfried; Liebe, Jurgen; and Muschelknautz, Horst, 4,197,742, Cl. 73-362.0CP.
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Geldin, Max: *See*—
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Gell, Harold A., Jr. Orientation system. 4,198,635, Cl. 343-112.0PT.
General Corporation, The: *See*—
Sugihara, Yasumasa, 4,198,663, Cl. 360-40.000.
General Electric Company: *See*—
Anderson, Wesley K.; and Stanley, Willard H., 4,198,583, Cl. 310-71.000.
Anthony, Thomas R.; Cline, Harvey E.; and Houston, Douglas E., 4,198,247, Cl. 148-1.500.
Berkowitz, Ami E.; and Holub, Fred F., 4,198,307, Cl. 252-62.540.
Carberg, William G.; and Ford, Mark R., Jr., 4,197,990, Cl. 236-1.00R.
Dills, Raymond L., 4,198,553, Cl. 219-10.55B.
Grady, James J., 4,198,113, Cl. 339-221.00R.
LeGrand, Donald G.; and Vitale, Gina G., 4,198,498, Cl. 528-38.000.
Marion, Roland M., 4,198,629, Cl. 340-761.000.
Milkovic, Miran, 4,198,595, Cl. 323-6.000.
Molari, Richard E., 4,198,468, Cl. 428-412.000.
Moore, James E.; Orkin, Ona V.; and Schroeter, Siegfried H., 4,198,465, Cl. 428-409.000.
Otto, Charles W., 4,198,584, Cl. 310-90.000.
Pierce, Linden W., 4,198,191, Cl. 417-369.000.
Pitha, John J., 4,198,443, Cl. 427-34.000.
Qurnell, Franklin D.; and Patterson, Charles B., 4,197,652, Cl. 33-174.00Q.
Schumacher, Frank A., 4,197,717, Cl. 62-213.000.
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General Energy Development Corp.: *See*—
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Mann, Gamdur S., 4,198,670, Cl. 361-283.000.
Sand, Roger D., 4,198,637, Cl. 343-715.000.
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General Safety Corporation: *See*—
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Mande, Irving; and Right, Robert W., 4,198,625, Cl. 340-517.000.
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Gergis, Isoris S.; and Chen, Thomas T., to Rockwell International Corporation. Magnetic bubble domain memory device with integrated buffer. 4,198,690, Cl. 365-15.000.
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Chen, Thomas T.; and Gergis, Isoris S., 4,198,691, Cl. 365-15.000.
Gerigk, Gunter: *See*—
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GF Business Equipment, Inc.: *See*—
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Giammarco, Giuseppe; and Giammarco, Paolo. Process for removing CO_2, H_2S and other gaseous impurities from gaseous mixtures. 4,198,378, Cl. 423-220.000.
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Giannuzzi, Louis N. Screw anchor. 4,197,781, Cl. 85-3.00S.
Giardini, Dante S., to Ford Motor Company. Constant pressure fuel injector assembly. 4,197,996, Cl. 239-87.000.
Gibbs, Bronwen, to Modern Office Equipment Pty. Ltd. Adjustable card holder. 4,198,105, Cl. 312-183.000.
Gibson, John J., to RCA Corporation. Rotating field polarization antenna system. 4,198,641, Cl. 343-797.000.
Gidai, Katalin: *See*—
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Deprez, Thomas A., 4,198,185, Cl. 409-262.000.
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Glosmann, Josef, to Hauni-Werke Korber & Co. KG. Apparatus for applying adhesive-coated labels to cigarette packs or the like. 4,198,258, Cl. 156-484.000.
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Goell, James E.; and Maklad, Mokhtar S., to International Telephone and Telegraph Corporation. Continuous fiber fabrication process. 4,198,223, Cl. 65-3.00A.
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Goldberg, A. Jon: *See*—
Burstone, Charles J.; and Goldberg, A. Jon, 4,197,643, Cl. 433-20.000.
Goldenthal, Edgar J. Dental pliers. 4,197,647, Cl. 433-159.000.
Goldfarb, Adolph E.; Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., to Goldfarb, Adolph E. Game device with release ramp and scoring recesses. 4,198,050, Cl. 273-120.00R.
Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Movable amusement toy. 4,198,068, Cl. 280-1.10R.
Goldstein, Robert P.: *See*—
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Gollnick, Wilhelm; and Wirz, Ernst, to Balcke-Durr Aktiengesellschaft. Regenerative-air preheater. 4,197,905, Cl. 165-4.000.

Golovich, Richard F. Tool for interlocking siding. 4,197,626, Cl. 29-270.000.

Golovinski, Evgeni V.; Alexiev, Boris V.; Spassov, Alexander V.; Stoev, Stoycho B.; Maneva, Lilyana S.; Emanuilov, Emanuil A.; Stoychev, Tzanko S.; and Angelov, Ivan I., to Ecnpk Po Biologia I Mediko-Biologichni Problemi Pri Ban. Anti-transplanted tumor remedy. 4,198,433, Cl. 424-320.000.

Goodhart, Frank W.: *See—*
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Goodyear Tire & Rubber Company, The: *See—*
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Gotshall, James T.: *See—*
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Goulish, Gabriel; and Hage, C. Herbert, to GF Business Equipment, Inc. Partition strut assembly. 4,197,685, Cl. 52-239.000.

Grady, James J., to General Electric Company. Terminal member. 4,198,113, Cl. 339-221.00R.

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Grainger, Norman, to R. P. Scherer Ltd. Pharmaceutical compositions. 4,198,391, Cl. 424-37.000.

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Graves, Louis N., to Louis N. Graves Co., Inc. Blade sharpener. 4,197,677, Cl. 51-214.000.

Gray, Gerald A., Jr., to Xerox Corporation. Control system for electrostatic type copy reproducing machines. 4,198,680, Cl. 364-518.000.

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Green, Stanley, to Lucas Industries Limited. Method of manufacturing a mould for producing a lamp lens element. 4,198,182, Cl. 409-132.000.

Greenhalgh, Geoffrey, to Triplex Safety Glass Company Limited. Toughened glass sheets. 4,198,463, Cl. 428-332.000.

Greenhawk, Ronald E., Sr. Bed-associated back-support means. 4,197,603, Cl. 5-431.000.

Greever, Willis L.; and Stevens, Philip M., to Hercules Incorporated. Single chamber rap having centerport inhibitor. 4,197,800, Cl. 102-38.0RA.

Grelat, Maurice; and Weis, Claus D., to Ciba-Geigy Corporation. Process for the production of alkoxy-substituted polycyclic aromatic compounds. 4,198,529, Cl. 568-633.000.

Grey, Vincent G. Damage control system for cargo vessels. 4,197,914, Cl. 169-51.000.

Grill Misono Co., Ltd.: *See—*
Fujioka, Shigeji, 4,198,561, Cl. 219-433.000.

Grime, Colin J.: *See—*
Seed, Geofrey; Hodgson, Donald; and Grime, Colin J., 4,198,271, Cl. 176-38.000.

Grinberg, Jan; Jacobson, Alexander D.; Bleha, William P., Jr.; and Braatz, Paul O., to Hughes Aircraft Company. High resolution continuously distributed silicon photodiode substrate. 4,198,647, Cl. 357-30.000.

Groenhof, Eugene D., to Dow Corning Corporation. Vapor booster fluids. 4,198,190, Cl. 417-55.000.

Grohmann, Klaus: *See—*
Riecker, Johann G.; and Grohmann, Klaus, 4,198,275, Cl. 202-263.000.

Groll, Manfred; and Muller, Friedhelm, to Bayer Aktiengesellschaft. Dyestuff solutions of copper phthalocyanine derivatives for paper dyeing. 4,198,203, Cl. 8-7.000.

Gromoglasova, Valentina N.: *See—*
Shafranovsky, Alexandr V.; Ruchinsky, Vitaly R.; Olevsky, Viktor M.; Gavrilin, Vladimir P.; Chubukov, Vladimir K.; Gromoglasova, Valentina N.; Bushev, Vladimir S.; Baskov, Jury A.; Kurkovskaya, Violetta V.; Gurkov, Boris A.; and Evkin, Ivan F., 4,198,361, Cl. 261-89.000.

Groves, Gerald T. Router guide assembly. 4,197,887, Cl. 144-136.00C.

Grubb, Robert G.: *See—*
Reese, Jack L.; Grubb, Robert G.; and Chacour, Selim A., 4,197,629, Cl. 29-560.000.

Grudzinskas, Charles V.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,198,521, Cl. 560-118.000.

Gruppo Lepetit S.p.A.: *See—*
Tarzia, Giorgio; and Panzone, Gianbattista, 4,198,502, Cl. 542-414.000.

Grzesiak, Anthony J., to Borg-Warner Corporation. Valve stem seal. 4,198,062, Cl. 277-3.000.

GSE, Inc.: *See—*
Barrett, Gary L., 4,197,736, Cl. 73-133.00R.

GTE Laboratories Incorporated: *See—*
Buhrer, Carl F., 4,197,957, Cl. 220-2.10R.

GTE Sylvania Incorporated: *See—*
Dow, Judith A.; Sententes, Thomas J.; Homer, Horace H.; and Shaffer, John W., 4,198,199, Cl. 431-360.000.

Guest, William R.: *See—*
Catlin, Jack R.; Strong, Robert E.; and Guest, William R., 4,198,221, Cl. 55-481.000.

Guk-Falzmaschinen Griesser & Kunzmann GmbH & Co. KG: *See—*
Kunzmann, Anton; and Kunzmann, Bernd, 4,197,773, Cl. 83-209.000.

Gulf Oil Canada Limited: *See—*
Sanford, Emerson; and Shaw, Robert, 4,197,937, Cl. 198-500.000.

Gulf Oil Corporation: *See—*
Bergman, Janice M.; Bevernitz, Kurt J.; and Rutter, Jerry L., 4,198,434, Cl. 424-320.000.

Gulf & Western Industries, Inc.: *See—*
Ezekiel, Frederick D.; and Aisenberg, Sol, 4,198,031, Cl. 251-117.000.

Gullo, Vincent P.: *See—*
Treiber, Laszlo R.; and Gullo, Vincent P., 4,198,338, Cl. 260-326.310.

Gupta, Dinesh K.; Dardi, Louis E.; and Freeman, William R., Jr., to Howmet Turbine Components Corporation. Method for producing elevated temperature corrosion resistant articles. 4,198,442, Cl. 427-34.000.

Gurkov, Boris A.: *See—*
Shafranovsky, Alexandr V.; Ruchinsky, Vitaly R.; Olevsky, Viktor M.; Gavrilin, Vladimir P.; Chubukov, Vladimir K.; Gromoglasova, Valentina N.; Bushev, Vladimir S.; Baskov, Jury A.; Kurkovskaya, Violetta V.; Gurkov, Boris A.; and Evkin, Ivan F., 4,198,361, Cl. 261-89.000.

Gusset, Erwin, to Swiss Aluminium Ltd. Recovery and separation of gadolinium and gallium. 4,198,231, Cl. 75-101.00R.

Gustav Huhn AB: *See—*
Huhn, Dieter, 4,198,064, Cl. 277-152.000.

Gutman, David. Shovel. 4,198,090, Cl. 294-58.000.

Gyorgy, Ernst M.; Le Craw, Roy C.; and Wolfe, Raymond, to Bell Telephone Laboratories, Incorporated. Garnet magnetoresistive sensor for magnetic fields. 4,198,689, Cl. 365-8.000.

Hach Chemical Company: *See—*
Hach, Clifford C.; and Buck, Michael D., 4,197,746, Cl. 73-425.40R.
Larson, Paul E., 4,198,161, Cl. 356-339.000.

Hach, Clifford C.; and Buck, Michael D., to Hach Chemical Company. Slurry pipet. 4,197,746, Cl. 73-425.40R.

Hachisu, Mitsugu: *See—*
Koeda, Takemi; Tsuruoka, Takashi; Shibata, Uichi; Asaoka, Hiroyasu; Hachisu, Mitsugu; Itoh, Osamu; Sekizawa, Yasuharu; Inouye, Shigeharu; and Niida, Taro, 4,198,416, Cl. 424-266.000.

Hackett, Kenneth P. Method and apparatus for the cold forming of metal. 4,197,757, Cl. 72-264.000.

Hackler, Lewis R.: *See—*
Hale, Harry F.; Hackler, Lewis R.; and Biron, Raymond J., 4,197,606, Cl. 8-149.200.

Hage, C. Herbert: *See—*
Goulish, Gabriel; and Hage, C. Herbert, 4,197,685, Cl. 52-239.000.

Hagie Manufacturing Co.: *See—*
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Woodruff, Kenneth A., 4,197,691, Cl. 56-10.200.

Hagie, Raymond W.; and Woodruff, Kenneth A., to Hagie Manufacturing Co. Crop height sensing assembly for mechanical detasseling devices. 4,197,694, Cl. 56-10.200.

Hagihara, Masaki: *See—*
Ishigaki, Yukinobu; Muraoka, Teruo; Hagihara, Masaki; Nasu, Takeo; and Kato, Kunihiro, 4,198,609, Cl. 329-136.000.

Haist, Melval C.; and Lischin, Alan J., to Communication Equipment and Engineering Company. Automatic call timing telephone apparatus. 4,198,545, Cl. 179-6.310.

Hajos, Gyorgy: *See—*
Ezer, Elemer; Szporny, Laszio; Forgach, Lilla; Palosi, Eva; Cholnoky, Eszter; Karpati, Egon; Hajos, Gyorgy; Hortobagyi, Gyozo; and Gidai, Katalin, 4,198,402, Cl. 424-232.000.

Halasa, Adel F.; and Hall, James E., to Firestone Tire & Rubber Company, The. Process for polymerizing butadiene. 4,198,496, Cl. 526-115.000.

Halasz, Peter R., to Bergen-Brunswig Corporation. Sanitary kit package. 4,197,941, Cl. 206-216.000.

Hale, Harry F.; Hackler, Lewis R.; and Biron, Raymond J., to Allied Chemical Corporation. Method for heat-setting synthetic yarn. 4,197,606, Cl. 8-149.200.

Hall, James E.: *See—*
Halasa, Adel F.; and Hall, James E., 4,198,496, Cl. 526-115.000.

Halle, Reidar: *See—*
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Halstead Industries, Inc.: *See—*
Nussbaum, Otto J., 4,197,716, Cl. 62-196.00B.

Hamada, Masa: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,198,480, Cl. 435-78.000.

Hamada, Takeshi: *See*—
Hongu, Masayuki; Hamada, Takeshi; and Yamagiwa, Kazuo, 4,198,650, Cl. 358-8.000.
Hamer, Leslie C.: *See*—
Zuckerman, Matthew M.; and Hamer, Leslie C., 4,198,298, Cl. 210-65.000.
Hamilton, Gordon A., to Champion International Corporation. Self-locking, reclosable carton. 4,197,981, Cl. 229-36.000.
Hamlin, James S., to Du Pont de Nemours, E. I., and Company. Processor for printing plates. 4,198,153, Cl. 354-325.000.
Hammer, Klaus-Dieter; and Gerigk, Gunter, to Hoechst Aktiengesellschaft. Shaped article comprising a permanently plasticized cellulose composition and preparation thereof. 4,198,325, Cl. 260-17.300.
Hammer, Urs; and Gisiger, Ernst, to Jura Elektroapparate-Fabriken L. Henzirohs A.G. Steam iron. 4,197,664, Cl. 38-77.830.
Hammond, Arthur R.: *See*—
Schertz, Burtron D.; Smith, Wayne A.; and Hammond, Arthur R., 4,198,543, Cl. 179-1.0GM.
Handler, Milton E.; Sylvan, Richard; and Baisch, Herbert, to Hirsh Company. Saw table. 4,197,775, Cl. 83-471.300.
Hans List: *See*—
Fachbach, Heinz; Thien, Gerhard; and Kirchweger, Karl, 4,197,826, Cl. 123-198.00E.
Hanson, Sheldon H.; Thompson, Craig B.; and Olson, James E., to Heublein, Inc. Taco shell manufacturing equipment using a low pressure steam chamber. 4,197,793, Cl. 99-352.000.
Hara, Kunio, to Nifco Incorporated. Thermal cut-off fuse. 4,198,617, Cl. 337-403.000.
Hara, Yoshiaki: *See*—
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Harada, Shigeo: *See*—
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Harashima, Kazuumi: *See*—
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Hardy, Kenneth D.; and Burton, George, to Beecham Group Limited. Carbamoyl heterocyclicthio cephalosporins and pharmaceutical compositions formulated therewith. 4,198,406, Cl. 424-246.000.
Harpman, Webster B.: *See*—
Mahoney, Fred G.; and Harpman, Webster B., 4,197,819, Cl. 123-25.00B.
Harris Corporation: *See*—
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Harris Corporation of Cleveland, Ohio: *See*—
Moore, George S., 4,198,675, Cl. 364-525.000.
Reddersen, Brad R.; Zech, Richard G.; and Roberts, Howard N., 4,198,701, Cl. 365-127.000.
Harris, David A.; and Jones, James E., to Owens-Corning Fiberglas Corporation. Acoustical ceiling baffle. 4,197,923, Cl. 181-287.000.
Harris, David W.: *See*—
Branecky, Anthony J.; and Harris, David W., 4,198,351, Cl. 260-603.00C.
Harris, Neville W., to High Voltage Engineering Corporation. High current triggered spark gap. 4,198,590, Cl. 315-335.000.
Harrison, John D.; and Jervis, James E., to Raychem Corporation. Heat recoverable metallic coupling. 4,198,081, Cl. 285-381.000.
Harrow, Robert A.: *See*—
Wetmore, Harold B.; Harrow, Robert A.; and Holway, William C., 4,198,110, Cl. 339-89.00R.
Harting, Darrell R.; and Egger, Richard L., to Boeing Company, The. Strain gage. 4,197,753, Cl. 73-766.000.
Hartman, Robert; Hopkins, Thomas E.; and Goldstein, Robert P., to Dittler Brothers, Inc. Composite envelope. 4,197,984, Cl. 229-74.000.
Hartmannsgruber, Max: *See*—
Kriechbaum, Kurt; Walter, Herbert; Konig, Herbert; and Hartmannsgruber, Max, 4,197,614, Cl. 19-159.00R.
Hartung, Kuhn & Co. Maschinenfabrik GmbH: *See*—
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Hartwig, Hans-Joachim, to Dragerwerk Aktiengesellschaft. Monitor device for a ventilation unit. 4,197,844, Cl. 128-205.230.
Hassler, Dieter, to Siemens Aktiengesellschaft. Ultrasonic imaging apparatus operating according to the impulse-echo method. 4,197,750, Cl. 73-629.000.
Hastbacka, Albin A.: *See*—
Misek, Victor A.; Hastbacka, Albin A.; Beairsto, Robert J.; and Trasatti, Alphonse J., 4,198,623, Cl. 340-365.00P.
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Hauni-Werke Korber & Co. KG.: *See*—
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Hauser, Raimund: *See*—
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Haverdink, Virgil D.; Maust, John E., Jr.; and Livesay, Fred C., Jr., to Deere & Company. Root crop harvester. 4,197,916, Cl. 171-58.000.
Hawkins, Wallace H. Press operating mechanism. 4,197,795, Cl. 100-257.000.
Hayata, Shinzi: *See*—
Yoshikawa, Tetsuo; Hayata, Shinzi; and Hirota, Yutaka, 4,198,369, Cl. 264-268.000.
Hayes, Richmond S., Jr.: *See*—
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Heatco, Inc.: *See*—
Pierce, Jeffrey D., 4,197,829, Cl. 126-121.000.
Heath, Rodney T. Method and apparatus for heating a separator. 4,198,214, Cl. 55-20.000.
Heaton, James W.; Warren, Donald W.; and Albrecht, Albert B., to Kennametal Inc. Quick change device for mounting tool in support member. 4,197,771, Cl. 82-36.00B.
Hedengerg, Gunnar, to AB Fyrtornet. Device for pelletizing and dosed feeding-out of fodder with varying degree of moisture. 4,198,197, Cl. 425-305.100.
Heintz, Walter K.: *See*—
Wu, Hai; and Heintz, Walter K., 4,197,997, Cl. 239-102.000.
Held, Robert P., to Du Pont de Nemours, E. I., and Company. Method for preparation of lithographic printing plate having addition polymerized areas and binder areas. 4,198,236, Cl. 430-306.000.
Helfenstine, Ronald A.; and McDaniel, Richard W., to Sports Marketing, Inc. Bubbling fishing lure. 4,197,667, Cl. 43-42.060.
Hellwig, Dieter: *See*—
Laqua, Arnold; Holtschmidt, Ulrich; Schamberg, Eckehard; and Hellwig, Dieter, 4,198,332, Cl. 260-29.4UA.
Hemler, Charles L., Jr.; and Stine, Laurence O., to UOP Inc. Method of regenerating coke-contaminated catalyst with simultaneous combustion of carbon monoxide. 4,198,287, Cl. 208-113.000.
Henkel Corporation, The: *See*—
Johnson, Ralph F.; and DeMars, Jimmy A., 4,198,276, Cl. 203-6.000.
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Conrad, Jens; Schaper, Ulf-Armin; and Bruns, Klaus, 4,198,323, Cl. 252-522.00R.
Henrick, Clive A., to Zoecon Corporation. Ether substituted cyclopropanecarboxylic acids and esters. 4,198,527, Cl. 562-506.000.
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Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity: *See*—
Sanford, Emerson; and Shaw, Robert, 4,197,937, Cl. 198-500.000.
Herbert, John T., to Aeroquip Corporation. Pressurized vibration isolator. 4,198,078, Cl. 285-49.000.
Hercules Incorporated: *See*—
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Hermans, Hubert K. F.: *See*—
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Hetherington, Roy, Jr.: *See*—
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Heublein, Inc.: *See*—
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Heuchert, John M. Hose clamp. 4,197,620, Cl. 24-274.00R.
Hewlett-Packard Company: *See*—
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Holdaway, Steven N., 4,198,604, Cl. 455-260.000.
Reach, Roy W.; Kahn, William M.; and Shapiro, David, 4,198,684, Cl. 364-900.000.
Hi-Sheet Industries Ltd.: *See*—
Yoshikawa, Tetsuo; Hayata, Shinzi; and Hirota, Yutaka, 4,198,369, Cl. 264-268.000.
High Voltage Engineering Corporation: *See*—
Harris, Neville W., 4,198,590, Cl. 315-335.000.
Hildebrandt, Florian; and Popp, Joachim, to Motoren-und Turbinen-Union Munchen GmbH. Apparatus for ventilating liquid containers on aircraft. 4,197,870, Cl. 137-43.000.
Hilfman, Lee; O'Hara, Mark J.; and Johnson, Russell W., to UOP Inc. Hydrocracking catalyst selective to middle distillate. 4,198,286, Cl. 208-111.000.
Hills, Robert N.: *See*—
Oltman, Eugene W.; and Hills, Robert N., 4,197,954, Cl. 215-1.00C.
Hillstead, David P.; Randolph, Robert W.; and Behle, Gunter R., to ACF Industries, Incorporated. Bottom operable tank car lading valve assembly which does not require a skid. 4,198,032, Cl. 251-144.000.
Hirabayashi, Hisaaki; and Sugimoto, Koichi, to Hitachi, Ltd. Interfitting apparatus. 4,197,627, Cl. 29-281.500.

Hirota, Yutaka: *See*—
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Hirsh Company: *See*—
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Hitachi Chemical Company, Inc.: *See*—
Konii, Susumu; Yoshida, Masatoshi; Yoshimura, Yukio; Ishibashi, Takehiko; and Sakamoto, Shizuo, 4,198,499, Cl. 528-146.000.

Hitachi, Ltd.: *See*—
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Yagi, Michio; Shiozawa, Kazuo; Suzuki, Kijiro; Aratame, Kazuhisa; Ishihara, Haruji; and Shimokawa, Ryushi, 4,198,142, Cl. 354-60.00R.

Hitachi Plant Engineering and Construction Co., Ltd.: *See*—
Ogawa, Toshio; Ebara, Katsuya; and Takahashi, Sankichi, 4,198,293, Cl. 210-23.00H.

Ho, Walford: *See*—
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Hochiki Corporation: *See*—
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Hochstein, Peter A. Thermal energy scavenger (stress limiter). 4,197,709, Cl. 60-527.000.

Hochstein, Peter A.: *See*—
Milton, Harold W., Jr.; Hochstein, Peter A.; and Pringle, William L., 4,197,708, Cl. 60-527.000.

Hodgson, Donald: *See*—
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Hoechst Aktiengesellschaft: *See*—
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Breitschaft, Siegfried; and Holtermann, Rolf, 4,197,660, Cl. 34-166.000.
Hammer, Klaus-Dieter; and Gerigk, Gunter, 4,198,325, Cl. 260-17.300.
Mylich, Wolfgang; and Albert, Walter, 4,198,486, Cl. 521-79.000.
Rosner, Manfred; and Raether, Wolfgang, 4,198,407, Cl. 424-249.000.
Rudolphy, Albert; and Dathe, Wolfgang, 4,198,329, Cl. 260-24.000.
von der Eltz, Hans-Ulrich; Lehmann, Joachim W.; Ungermann, Erwin; Humuller, Edwin; Keil, Karl-Heinz; and Ribka, Joachim, 4,198,204, Cl. 8-21.00R.

Hoefnagels, Johannes F., to U.S. Philips Corporation. Pivotable cassette holder for a magnetic tape recorder apparatus. 4,198,665, Cl. 360-96.600.

Hoffmann-La Roche Inc.: *See*—
Barry, Richard; and Rubin, Howard, 4,198,507, Cl. 544-267.000.
Batcho, Andrew D.; and Leimgruber, Willy, 4,198,501, Cl. 542-443.000.
Boller, Arthur; Germann, Alfred; Schadt, Martin; and Scherrer, Hanspeter, 4,198,130, Cl. 350-350.000.
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Hofmann, Ulrich; and Thomma, Lothar. Method for forming of stitches and knitting machine for carrying out the method. 4,197,721, Cl. 66-19.000.

Hohenschutz, Heinz: *See*—
Merger, Franz; Strohmeyer, Max; Sandrock, Gerhard; Hohenschutz, Heinz; Schroff, Ludwig; and Nestler, Gerhard, 4,198,531, Cl. 568-793.000.

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Hokuriku Pharmaceutical Co., Ltd.: *See*—
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Holappa, Vaino A. Exercise board. 4,198,044, Cl. 272-135.000.

Holcomb, Orla Lee, Jr.: *See*—
Johannesen, Donald D.; Holcomb, Orla Lee, Jr.; and Kazmierzak, Andrew F., 4,197,927, Cl. 188-77.00R.

Holcombe, Gordon B., to Baxter, Duane J. Inflatable frame for tent. 4,197,681, Cl. 52-2.000.

Holdaway, Steven N., to Hewlett-Packard Company. Heterodyne phase lock system. 4,198,604, Cl. 455-260.000.

Holdren Brothers, Inc.: *See*—
Holdren, John A.; and Holdren, Raymond S., 4,198,186, Cl. 414-308.000.

Holdren, John A.; and Holdren, Raymond S., to Holdren Brothers, Inc. Silo dig out tool. 4,198,186, Cl. 414-308.000.

Holdren, Raymond S.: *See*—
Holdren, John A.; and Holdren, Raymond S., 4,198,186, Cl. 414-308.000.

Holland, Donna M., administratrix: *See*—
Holland, Richard W., deceased; and Holland, Donna M., administratrix, 4,197,733, Cl. 73-49.100.

Holland, Richard W., deceased; and by Holland, Donna M., administratrix. Pressure test apparatus. 4,197,733, Cl. 73-49.100.

Holley, Boyce B.; and Warren, James R., to Jones, S. E. Rolling hairbrush. 4,197,608, Cl. 15-27.000.

Holman, Mitchell R. High density bridge pin. 4,197,779, Cl. 84-298.000.

Holmes, Gordon W., to Professional Packaging Limited. Method and apparatus for molding holders for disc-like objects. 4,198,371, Cl. 264-297.000.

Holmes, Joseph A. H.: *See*—
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Holmes, William K., to J. I. Case Company. Exhaust system for straddle carrier engines. 4,197,703, Cl. 60-319.000.

Holtermann, Rolf: *See*—
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Holub, Fred F.: *See*—
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Holway, William C.: *See*—
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Holzbaur, Siegfried, to Robert Bosch GmbH. Fuel injection system. 4,197,824, Cl. 123-139.0AW.

Homer, Charles J., to Dynasciences Corporation. Rapid aspiration system for culture media. 4,198,482, Cl. 435-284.000.

Homer, Horace H.: *See*—
Dow, Judith A.; Sententes, Thomas J.; Homer, Horace H.; and Shaffer, John W., 4,198,199, Cl. 431-360.000.

Homma, Hiroshige: *See*—
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; and Homma, Hiroshige, 4,198,512, Cl. 546-142.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Date, Tasuku; and Mizoguchi, Takeru, 4,197,704, Cl. 60-322.000.
Fukui, Takeo, 4,198,065, Cl. 277-217.000.

Honda, Yasuhiro, to Citizen Watch Co., Ltd. Automated assembly apparatus for printed circuit boards. 4,197,637, Cl. 29-741.000.

Honeywell, Inc.: *See*—
Lorenze, Robert V., Jr.; and White, William J., 4,197,633, Cl. 29-577.00R.

Honeywell Information Systems Italia: *See*—
Albani, Alfonso; and Maccario, Ermanno, 4,198,682, Cl. 364-900.000.

Hongu, Masayuki; Hamada, Takeshi; and Yamagiwa, Kazuo, to Sony Corporation. Capacitive-type nonlinear emphasis circuit. 4,198,650, Cl. 358-8.000.

Hood, Lyal V.: *See*—
Lerner, Melvin; Hood, Lyal V.; Rommel, Marjorie A.; Pettitt, Bruce C.; and Erikson, Charles M., 4,198,208, Cl. 23-232.00R.

Hoover, Maurice W., to Research Triangle Institute. Nut cheese product. 4,198,439, Cl. 426-632.000.

Hooykaas, Carel W. J., to Pelt & Hooykaas B.V. Coating pipes and receptacles with a weighting layer or mass of steel slag aggregate. 4,198,450, Cl. 427-427.000.

Hopkins, Grant, to Cantrell, Mark. Wheeled vehicle. 4,198,072, Cl. 280-267.000.

Hopkins, Thomas E.: *See*—
Hartman, Robert; Hopkins, Thomas E.; and Goldstein, Robert P., 4,197,984, Cl. 229-74.000.

Horikoshi, Ichiro: *See*—
Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; Horikoshi, Ichiro; and Takahashi, Souya, 4,197,697, Cl. 368-315.000.

Hornbaker, Edwin D.; and Li, Hsueh M., to Ethyl Corporation. Process for preparing low molecular weight linear phosphonitrilic chloride oligomers. 4,198,381, Cl. 423-300.000.

Hornle, Reinhold: *See*—
Kaspar, Vaclav; Molls, Hans-Heinz; Hornle, Reinhold; and Hummes, Ferdinand, 4,198,264, Cl. 159-4.00B.

Hortobagyi, Gyozo: *See*—
Ezer, Elemer; Szporny, Laszio; Forgach, Lilla; Palosi, Eva; Cholnoky, Eszter; Karpati, Egon; Hajos, Gyorgy; Hortobagyi, Gyozo; and Gidai, Katalin, 4,198,402, Cl. 424-232.000.

Hoshi, Hideaki: *See*—
Naito, Takayuki; Okumura, Jun; Kamachi, Hajime; Iimura, Seiji; Hoshi, Hideaki; and Oka, Masahisa, 4,198,506, Cl. 544-236.000.

Hoskins, Jerry W.: *See*—
Brown, John T.; and Hoskins, Jerry W., 4,198,279, Cl. 204-195.00S.

Houston, Douglas E.: *See*—
Anthony, Thomas R.; Cline, Harvey E.; and Houston, Douglas E., 4,198,247, Cl. 148-1.500.

Howard, Dennis D.: *See*—
Fonda, James B.; Swanson, Howard B., Jr.; and Howard, Dennis D., 4,198,200, Cl. 431-360.000.

Howmet Turbine Components Corporation: *See*—
Gupta, Dinesh K.; Dardi, Louis E.; and Freeman, William R., Jr., 4,198,442, Cl. 427-34.000.

Hoy, Kenneth L.: *See*—
Drake, Kenneth; Hoy, Kenneth L.; and Seefried, Carl G., Jr., 4,198,488, Cl. 521-137.000.

Hsu, Sheng T., to RCA Corporation. MNOS memory device. 4,198,252, Cl. 148-187.000.

Hubert, Peter: *See*—
Vitzthum, Otto; and Hubert, Peter, 4,198,432, Cl. 426-312.000.

Hudgin, Richard H.: *See*—
Tatian, Berge; Hudgin, Richard H.; and Nisenson, Peter, 4,198,125, Cl. 350-162.0SF.

Hudson, Derek; Sharpe, Robert; Szelke, Michael; MacIntyre, Iain; and Fink, George. Enkephalin analogues. 4,198,398, Cl. 424-177.000.
Hughes Aircraft Company: *See*—
Alexander, David H.; Hershman, George H.; Jack, Michael D.; Koda, N. John; and Lloyd, Randahl B., 4,198,646, Cl. 357-30.000.
Grinberg, Jan; Jacobson, Alexander D.; Bleha, William P., Jr.; and Braatz, Paul O., 4,198,647, Cl. 357-30.000.
Keller, Leon B.; and Jenkins, Robert K., 4,198,461, Cl. 428-288.000.
Hughes, Charles R.; and Stanzione, Louis A., to Bethlehem Steel Corporation. Method of making sealed wire rope. 4,197,695, Cl. 57-7.000.
Hughes, Francis H.; Morton, Kenneth O.; LeMere, Roger; and Brown, Fred A., III, to Cluett, Peabody & Co., Inc. Method and apparatus for handling, positioning and assembling fabric plies. 4,198,041, Cl. 271-9.000.
Huhn, Dieter, to Gustav Huhn AB. Shaft seal. 4,198,064, Cl. 277-152.000.
Huisveld, Peter, Jr.; Papineau, Milton D.; and Routh, Claude C., to United States of America, Navy. Submarine simulating sonar beacon. 4,198,703, Cl. 367-1.000.
Hummes, Ferdinand: *See*—
Kaspar, Vaclav; Molls, Hans-Heinz; Hornle, Reinhold; and Hummes, Ferdinand, 4,198,264, Cl. 159-4.00B.
Humuller, Edwin: *See*—
von der Eltz, Hans-Ulrich; Lehmann, Joachim W.; Ungermann, Erwin; Humuller, Edwin; Keil, Karl-Heinz; and Ribka, Joachim, 4,198,204, Cl. 8-21.00R.
Hundemer, Peter: *See*—
Muth, Hans-Albrecht; Stark, Rudolf; Marwitz, Hans-Gunther v. d.; Hundemer, Peter; Estel, Heinz; and Reissig, Dirk, 4,198,093, Cl. 296-78.100.
Hunter, Charley W.: *See*—
Moss, Charles A.; Shaneyfelt, Leon J., Jr.; and Hunter, Charley W., 4,197,988, Cl. 235-449.000.
Hunter, Edwin J., to Toro Company, The. Stream rotor sprinkler with rotating deflectors. 4,198,000, Cl. 239-222.130.
Huron Tool & Manufacturing, Division of U. S. Industries, Inc.: *See*—
Oldford, William G., 4,198,077, Cl. 285-21.000.
Hurwitt, Steven D.: *See*—
Class, Walter H.; Unterkofler, George J.; and Hurwitt, Steven D., 4,198,283, Cl. 204-298.000.
Hutchison, Stanley O., to Chevron Research Company. Jet device for use in wells. 4,197,910, Cl. 166-223.000.
Hynes, Bernard D. Construction elements and assembled structures. 4,197,669, Cl. 46-25.000.
Ideus, Inc.: *See*—
Thompson, Vern C., 4,197,878, Cl. 137-625.660.
Iijima, Hiroshi; and Sano, Yasushi, to Nippon Electric Co., Ltd. Vertical synchronizing signal detector for television video signal reception. 4,198,659, Cl. 358-150.000.
Iimura, Seiji: *See*—
Naito, Takayuki; Okumura, Jun; Kamachi, Hajime; Iimura, Seiji; Hoshi, Hideaki; and Oka, Masahisa, 4,198,506, Cl. 544-236.000.
Ikeda, Tomoaki: *See*—
Nahara, Akira; Ono, Yoshihiro; Namiki, Tomizo; Harada, Shigeo; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,198,237, Cl. 430-415.000.
Ikemi, Shinichi; and Shimoda, Michio, to Mitsubishi Denki Kabushiki Kaisha. Method of controlling a shape of a rolled sheet. 4,197,727, Cl. 72-12.000.
Ikio Iron Works Co., Ltd.: *See*—
Ikio, Kazumi, 4,198,274, Cl. 202-248.000.
Ikio, Kazumi, to Ikio Iron Works Co., Ltd. Door for a coke oven furnace. 4,198,274, Cl. 202-248.000.
Ilhage, Bertil G.; and Envall, Bjorn E. A., to Saab-Scania Aktiebolag. Light unit for vehicles. 4,198,674, Cl. 362-80.000.
Ilin, Vladimir A.: *See*—
Bloshenko, Vladimir V.; Beizerov, Semen M.; Derjugin, Alexandr N.; and Ilin, Vladimir A., 4,197,900, Cl. 164-147.000.
Imai, Kiyonori, to Kayaba Kogyo K.K. Device for producing damping force in hydraulic shock absorbers. 4,197,929, Cl. 188-320.000.
Imanishi, Masayuki; Masuoka, Yutaka; and Nakajima, Ryoko, to Takeda Chemical Industries, Ltd. Lactam compounds. 4,198,514, Cl. 546-216.000.
Imatt, Alex, to Marvin Glass & Associates. Interacting game board and playing piece. 4,198,055, Cl. 273-243.000.
Imhoff, William B., to Leigh Products, Inc. Surface bolt. 4,198,082, Cl. 292-67.000.
Imperial Chemical Industries Limited: *See*—
Copeland, Robert J.; and Edwards, Philip N., 4,198,523, Cl. 562-470.000.
Edwards, Philip N., 4,198,526, Cl. 562-478.000.
Nightingale, Douglas D. J., 4,198,368, Cl. 264-263.000.
Punja, Nazim, 4,198,347, Cl. 260-464.000.
Richardson, Dora N., 4,198,435, Cl. 424-330.000.
Imperial Oil Limited: *See*—
Sanford, Emerson; and Shaw, Robert, 4,197,937, Cl. 198-500.000.
Inatomi, Makoto: *See*—
Katayama, Hiroyuki; Inatomi, Makoto; Kajioka, Hiroyuki; Nakamura, Yasushi; Ito, Michihisa; Harashima, Kazuumi; and Ohno, Takamasa, 4,198,229, Cl. 75-53.000.
Indesit Industria Elettrodomestici Italiana S.p.A.: *See*—
Ferracini, Flavio, 4,198,660, Cl. 358-190.000.
Indo, Akira: *See*—
Mistui, Seiji; Ogiso, Akira; and Indo, Akira, 4,198,425, Cl. 424-279.000.
Industrie Pirelli S.p.A.: *See*—
Calori, Giovanni, 4,198,372, Cl. 264-326.000.
Inoue, Shigeo; Miyamoto, Norioki; and Shimizu, Haruo, to Kao Soap Co., Ltd. Compositions containing beta substituted acrylic acid amides as preservatives. 4,198,304, Cl. 252-47.500.
Inouye, Shigeharu: *See*—
Koeda, Takemi; Tsuruoka, Takashi; Shibata, Uichi; Asaoka, Hiroyasu, Hachisu, Mitsugu; Itoh, Osamu; Sekizawa, Yasuharu; Inouye, Shigeharu; and Niida, Taro, 4,198,416, Cl. 424-266.000.
Institut Kibernetiki Akademii Nauk Ukrainskoi SSR: *See*—
Fainzilberg, Leonid S., 4,198,679, Cl. 364-497.000.
Intel Corporation: *See*—
Jecmen, Robert M., 4,198,250, Cl. 148-1.500.
International Business Machines Corporation: *See*—
Barker, Robert B.; and Stack, James B., 4,198,156, Cl. 355-30.000.
Bertin, Claude L.; Bula, John; Martin, Larry C.; and Williams, Thomas A., 4,198,696, Cl. 365-175.000.
Cachon, Rene P., 4,198,159, Cl. 355-55.000.
Faris, Sadeg M., 4,198,577, Cl. 307-212.000.
Furr, Glynn R., Jr., 4,198,681, Cl. 364-900.000.
Uberbacher, Edward C., 4,198,119, Cl. 350-96.200.
International Flavors & Fragrances Inc.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joaquin; Kiwala, Jacob; and Schreiber, William L., 4,198,309, Cl. 252-174.110.
Yoshida, Takao; and Vock, Manfred H., 4,198,393, Cl. 424-49.000.
International Standard Electric Corporation: *See*—
Maatje, Henri; and Spannagel, Richard, 4,198,678, Cl. 364-426.000.
International Telephone and Telegraph Corporation: *See*—
Goell, James E.; and Maklad, Mokhtar S., 4,198,223, Cl. 65-3.00A.
Interox Chemicals Limited: *See*—
Burkin, Alfred R.; and Chouzadjian, Kevork A., 4,198,377, Cl. 423-50.000.
Interstate Folding Box Company, The: *See*—
Nerenberg, Robert W., 4,197,963, Cl. 220-462.000.
Inui, Taiji: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,198,480, Cl. 435-78.000.
Irwin, Elwood N.: *See*—
Kollman, Gerald E.; and Irwin, Elwood N., 4,198,227, Cl. 71-115.000.
Isa, Hiroshi: *See*—
Mandai, Hiroshi; Tominaga, Anri; Yoshimura, Yoshikazu; and Isa, Hiroshi, 4,198,534, Cl. 585-16.000.
Ishibashi, Takehiko: *See*—
Konii, Susumu; Yoshida, Masatoshi; Yoshimura, Yukio; Ishibashi, Takehiko; and Sakamoto, Shizuo, 4,198,499, Cl. 528-146.000.
Ishigaki Kiko Co., Ltd.: *See*—
Iwatani, Akitoshi, 4,198,301, Cl. 210-274.000.
Ishigaki, Yukinobu; Muraoka, Teruo; Hagihara, Masaki; Nasu, Takeo; and Kato, Kunihiro, to Victor Company of Japan, Limited. Phase tracked loop frequency demodulator. 4,198,609, Cl. 329-136.000.
Ishiguro, Toshio, to Kubota, Ltd. Work implement mounting structure. 4,198,074, Cl. 280-415.00A.
Ishihara, Haruji: *See*—
Yagi, Michio; Shiozawa, Kazuo; Suzuki, Kijiro; Aratame, Kazuñisa; Ishihara, Haruji; and Shimokawa, Ryushi, 4,198,142, Cl. 354-60.00R.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Shimizu, Masami; and Koike, Takaaki, 4,198,063, Cl. 277-79.000.
Ishizuka, Masaaki: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,198,480, Cl. 435-78.000.
Isomura, Yasuo: *See*—
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; and Homma, Hiroshige, 4,198,512, Cl. 546-142.000.
Itek Corporation: *See*—
Tatian, Berge; Hudgin, Richard H.; and Nisenson, Peter, 4,198,125, Cl. 350-162.0SF.
Ito, Hideo: *See*—
Ozawa, Akio; Sakamoto, Masaharu; and Ito, Hideo, 4,198,578, Cl. 307-246.000.
Ito, Michihisa: *See*—
Katayama, Hiroyuki; Inatomi, Makoto; Kajioka, Hiroyuki; Nakamura, Yasushi; Ito, Michihisa; Harashima, Kazuumi; and Ohno, Takamasa, 4,198,229, Cl. 75-53.000.
Ito, Noriki: *See*—
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; and Homma, Hiroshige, 4,198,512, Cl. 546-142.000.
Ito & Okamoto, Esq.: *See*—
Yamada, Takuro; Katsumi, Yasuo; and Matsuda, Shoei, 4,197,679, Cl. 51-281.00C.
Itoh, Osamu: *See*—
Koeda, Takemi; Tsuruoka, Takashi; Shibata, Uichi; Asaoka, Hiroyasu; Hachisu, Mitsugu; Itoh, Osamu; Sekizawa, Yasuharu; Inouye, Shigeharu; and Niida, Taro, 4,198,416, Cl. 424-266.000.
Itoh, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Wide angle zoom lens system having small distortion. 4,198,127, Cl. 350-184.000.
Itoh, Yoshitaka: *See*—
Suzuki, Toshimasa; Matsuyama, Chiaki; Ogawa, Susumu; Itoh, Yoshitaka; and Usui, Yasuo, 4,197,623, Cl. 29-33.00D.
ITT Industries, Incorporated: *See*—
Oberthur, Heinrich, 4,198,099, Cl. 303-6.00C.

Oberthur, Heinrich, 4,198,101, Cl. 303-22.00R.
Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; Yamazaki, Atsuki; Tamazawa, Kazaharu; Murase, Kiyoshi; and Shibanuma, Tadao, to Yamanouchi Pharmaceutical Co., Ltd. 1,3-Dithietane-2-carboxylic acids and the preparation thereof. 4,198,339, Cl. 549-89.000.
Iwasaki, Masami: *See—*
Matsui, Kazumi; Takasue, Takashi; and Iwasaki, Masami, 4,197,934, Cl. 198-472.000.
Iwatani, Akitoshi, to Ishigaki Kiko Co., Ltd. Filter apparatus using floating filter medium. 4,198,301, Cl. 210-274.000.
Izawa, Shinichi; Sugiyama, Jun; and Nakanishi, Atsuo, to Asahi-Dow Limited. Flame-retardant polyphenylene ether resin composition. 4,198,492, Cl. 525-134.000.
J. I. Case Company: *See—*
Flippin, James S., 4,197,918, Cl. 172-699.000.
Holmes, William K., 4,197,703, Cl. 60-319.000.
Jack, Michael D.: *See—*
Alexander, David H.; Hershman, George H.; Jack, Michael D.; Koda, N. John; and Lloyd, Randahl B., 4,198,646, Cl. 357-30.000.
Jackson, Byron L.; and Caldwell, Richard F., to Robertshaw Controls Company. Fluid operated valve positioner. 4,198,030, Cl. 251-61.500.
Jackson, R. Tom: *See—*
Stowell, Donald E.; Jackson, R. Tom; and Bendig, Larry L., 4,198,318, Cl. 252-448.000.
Jacobson, Alexander D.: *See—*
Grinberg, Jan; Jacobson, Alexander D.; Bleha, William P., Jr.; and Braatz, Paul O., 4,198,647, Cl. 357-30.000.
Jacobson, Lawrence R.: *See—*
Seger, Ronald G.; Trombley, Wayne E.; and Jacobson, Lawrence R., 4,198,132, Cl. 351-160.00R.
Jacquet, Bernard; and Lang, Gerard, to L'Oreal. Treating hair with quaternized polymers. 4,197,865, Cl. 132-7.000.
Jaehn, Edwin C.: *See—*
Deprez, Thomas A.; and Jaehn, Edwin C., 4,198,066, Cl. 279-2.00R.
Jahnig, Charles E. Gas turbine power system with fuel injection and combustion catalyst. 4,197,700, Cl. 60-39.040.
Jahoda, John, to Carrier Corporation. Plate fin coil assembly. 4,197,625, Cl. 29-157.30V.
James G. Brown & Associates, Inc.: *See—*
Robinson, Sam P., 4,198,384, Cl. 423-488.000.
James, G. Russell. Nitrogen oxide pollution abatement using catalytic combustion. 4,198,379, Cl. 423-239.000.
James River Graphics Inc.: *See—*
Plumadore, John D., 4,197,970, Cl. 226-94.000.
James, Robert G. Counter-balanced pumping system. 4,197,766, Cl. 74-611.000.
Janssen Pharmaceutica N.V.: *See—*
Sanczuk, Stefan; and Hermans, Hubert K. F., 4,198,411, Cl. 424-251.000.
Japan Crown Cork Co., Ltd.: *See—*
Murayama, Kashiwa, 4,197,956, Cl. 215-254.000.
Jecmen, Robert M., to Intel Corporation. Shadow masking process for forming source and drain regions for field-effect transistors and like regions. 4,198,250, Cl. 148-1.500.
Jenkins, Robert K.: *See—*
Keller, Leon B.; and Jenkins, Robert K., 4,198,461, Cl. 428-288.000.
Jerabek, Robert D.: *See—*
Buchwalter, Stephen L.; Jerabek, Robert D.; Chou, Lee-Pei H.; and Christenson, Roger M., 4,198,331, Cl. 260-29.2EP.
Jernigan, James L.; and O'Neill, Thomas F., Jr., to United States of America, Navy. Optical autocorrelator signal processor. 4,198,634, Cl. 343-100.0CL.
Jervis, James E.: *See—*
Harrison, John D.; and Jervis, James E., 4,198,081, Cl. 285-381.000.
Jirkovsky, Ivo L.: *See—*
Philipp, Adolf H.; and Jirkovsky, Ivo L., 4,198,426, Cl. 424-283.000.
Jocteur, Robert: *See—*
Le Davay, Louis; and Jocteur, Robert, 4,198,121, Cl. 350-96.300.
Johannesen, Donald D.; Holcomb, Orla Lee, Jr.; and Kazmierzak, Andrew F., to Bendix Corporation, The. Band brake and actuator therefor. 4,197,927, Cl. 188-77.00R.
Johansson, Johan G. I., to Defibrator Aktiebolag. Apparatus for relieving blockage of the pulp discharge passage in a cyclone in a pulping system. 4,198,302, Cl. 210-512.00R.
Johenning, Jeb B., to Laguna, Mfg. Soft rail waterbed. 4,197,602, Cl. 5-286.000.
John H. Best and Sons, Inc.: *See—*
Ovitz, Ernest G., III, 4,197,950, Cl. 211-134.000.
John Labatt Limited: *See—*
Singer, Norman S.; and Murray, David W., 4,198,438, Cl. 426-549.000.
Johns-Manville Corporation: *See—*
Pletcher, Jackie E.; Johnson, Brady G.; and Armstrong, Richard G., 4,198,022, Cl. 248-320.000.
Johnsen, Henry K.: *See—*
Andreassen, Knut A.; Johnsen, Henry K.; Solheim, Peder R.; and Kleveland, Sigbjorn, 4,198,282, Cl. 204-243.00R.
Johnson, Brady G.: *See—*
Pletcher, Jackie E.; Johnson, Brady G.; and Armstrong, Richard G., 4,198,022, Cl. 248-320.000.
Johnson, Charles R., to Firestone Tire & Rubber Company, The. Method of removing volatiles from an elastomer. 4,198,265, Cl. 159-47.00R.
Johnson, Delmar R., to Bell & Howell Company. Automatic microfilm camera operated responsive to data input at a computer terminal. 4,198,157, Cl. 355-40.000.
Johnson, Dwight N., to Textron, Inc. Flow responsive device. 4,197,809, Cl. 116-275.000.
Johnson, Dwight N., to Textron, Inc. Throttling control valve. 4,198,029, Cl. 251-61.100.
Johnson, Leslie H.: *See—*
Nelson, George F.; Cosimini, Gregory J.; Johnson, Leslie H.; Lo, David S.; Paul, Maynard C.; and Torok, Ernest J., 4,198,686, Cl. 365-79.000.
Johnson, Merlyn B. Simulated rock assembly. 4,197,684, Cl. 52-102.000.
Johnson, Ralph F.; and DeMars, Jimmy A., to Henkel Corporation, The. Process for thermally stabilizing sterols. 4,198,276, Cl. 203-6.000.
Johnson, Ronald V., to Champion International Corporation. Box with reinforced corners. 4,197,980, Cl. 229-34.00R.
Johnson, Russell W.: *See—*
Hilfman, Lee; O'Hara, Mark J.; and Johnson, Russell W., 4,198,286, Cl. 208-111.000.
Johnson, Trevor K.: *See—*
Cadle, Terence M.; Lane, Martyn S.; and Johnson, Trevor K., 4,198,234, Cl. 75-247.000.
Johnston, Jimmy J.: *See—*
Canterbury, Robert W.; and Johnston, Jimmy J., 4,198,636, Cl. 343-715.000.
Johnston, Mary H.: *See—*
Parr, Richard A.; Johnston, Mary H.; and McClure, John C., 4,198,232, Cl. 75-135.000.
Johnstun, Dick E. Marker layup. 4,198,451, Cl. 428-36.000.
Jolivet, Yannick; and Lachevre, Christian, to Compagnie Francaise de Raffinage. N-Substituted acrylamidines, copolymers of N-substituted acrylamidines and esters of acrylic and methacrylic acid and uses of the copolymers. 4,198,497, Cl. 526-310.000.
Jolly, John H., Jr. Self-leveling boom-type spraying apparatus. 4,197,998, Cl. 239-184.000.
Jones, David P.: *See—*
Birdsall, Arthur A.; Fitzgerald, John K.; Jones, David P.; and Polmanteer, Keith E., 4,198,131, Cl. 351-160.00R.
Jones, James E.: *See—*
Harris, David A.; and Jones, James E., 4,197,923, Cl. 181-287.000.
Jones, S. E.: *See—*
Holley, Boyce B.; and Warren, James R., 4,197,608, Cl. 15-27.000.
Jordan, Robert K. Carbonaceous fines in an oxygen-blown blast furnace. 4,198,228, Cl. 75-42.000.
Josyln Mfg. and Supply Co.: *See—*
Lusk, George E., 4,198,538, Cl. 174-140.00S.
Juengel, Richard O.: *See—*
Bailey, Kurt W.; and Juengel, Richard O., 4,197,650, Cl. 33-143.00L.
Jun, Mong-Jon: *See—*
Bronstert, Bernd; Kuesters, Werner; Jun, Mong-Jon; and Wallbillich, Guenter, 4,198,241, Cl. 430-284.000.
Juneja, Prem S., to Procter & Gamble Company, The. Oral compositions containing bis-biguanides with reduced staining tendencies. 4,198,392, Cl. 424-48.000.
Jura Elektroapparate-Fabriken L. Henzirohs A.G.: *See—*
Hammer, Urs; and Gisiger, Ernst, 4,197,664, Cl. 38-77.830.
Jursich, Donald N.: *See—*
Crowley, George C.; and Jursich, Donald N., 4,198,556, Cl. 219-370.000.
Kabel-und Metallwerke Gutehoffnungshuette AG: *See—*
Von Jan, Wolfgang; and Gravemann, Horst, 4,197,902, Cl. 164-418.000.
Kabushiki Kaisha Daini Seikosha: *See—*
Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; Horikoshi, Ichiro; and Takahashi, Souya, 4,197,697, Cl. 368-315.000.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
Komatsu, Fumito; Saito, Takeo; and Wakabayashi, Nobuaki, 4,197,778, Cl. 84-95.00R.
Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, 4,197,799, Cl. 101-291.000.
Kachel, Volker; and Glossner, Ewald, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Apparatus for performing at least two measurements of characteristics in a particle suspension. 4,198,160, Cl. 356-72.000.
Kahn, William M.: *See—*
Reach, Roy W.; Kahn, William M.; and Shapiro, David, 4,198,684, Cl. 364-900.000.
Kaizerman, Samuel; and Aloia, Romeo R., to American Cyanamid Company. Polyurethane latices modified by a vinyl polymer. 4,198,330, Cl. 260-29.60R.
Kajioka, Hiroyuki: *See—*
Katayama, Hiroyuki; Inatomi, Makoto; Kajioka, Hiroyuki; Nakamura, Yasushi; Ito, Michihisa; Harashima, Kazuumi; and Ohno, Takamasa, 4,198,229, Cl. 75-53.000.
Kakigi, Takao, to Cybernet Electronics Corporation. Photoelectric synchronous smoke sensor. 4,198,627, Cl. 340-630.000.
Kaltenbach, Volker: *See—*
Beinitz, Karl; and Kaltenbach, Volker, 4,198,607, Cl. 328-143.000.
Kamachi, Hajime: *See—*
Naito, Takayuki; Okumura, Jun; Kamachi, Hajime; Iimura, Seiji; Hoshi, Hideaki; and Oka, Masahisa, 4,198,506, Cl. 544-236.000.
Kamijo, Ken; and Fukunaga, Yukio, to Nissan Motor Company, Limited. Belt tension eliminator for a seat belt retractor. 4,198,011, Cl. 242-107.700.

Kamin, Gerhard R., to Robert Bosch GmbH. Video alarm systems. 4,198,653, Cl. 358-105.000.

Kaminow, Ivan P., to Bell Telephone Laboratories, Incorporated. Fabry-Perot resonator using a birefringent crystal. 4,198,115, Cl. 350-96.140.

Kamprath, Theodore, to RCA Corporation. Method of fabricating MNOS transistors having implanted channels. 4,197,630, Cl. 29-571.000.

Kan, Peter T.: *See*—
Schaaf, Robert L.; Kan, Peter T.; and Cenker, Moses, 4,198,489, Cl. 521-160.000.

Kanamaru, Hitoshi, to Pioneer Electronic Corporation. Optical disk reader with means for correcting errors due to eccentricity and time axis variations. 4,198,657, Cl. 358-128.500.

Kanebo Ltd.: *See*—
Matsui, Hironori, 4,198,382, Cl. 423-445.000.

Kant, Michel, to Agence Nationale de Valorisation de la Recherche (ANVAR). Regulated apparatus for the generation of electrical energy, such as a wind generator. 4,198,572, Cl. 290-44.000.

Kantner, Otto: *See*—
Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, 4,198,133, Cl. 352-27.000.

Kao Soap Co., Ltd.: *See*—
Inoue, Shigeo; Miyamoto, Norioki; and Shimizu, Haruo, 4,198,304, Cl. 252-47.500.

Karasawa, Yukinori, to Tokyo Kogaku Kikai Kabushiki Kaisha. Apparatus for taking photographs of sections of crystalline lenses in which line focusing moves lens in its own plane. 4,198,143, Cl. 354-62.000.

Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Kohl, Karl, 4,197,725, Cl. 66-213.000.

Karns, Ward L.: *See*—
Rayfield, Wilson P.; Preston, Norman H.; Ferguson, Ronald W.; Dear, Frederick H.; Korytkowski, Henry M.; Muster, Frank L.; and Karns, Ward L., 4,197,797, Cl. 101-90.000.

Karpati, Egon: *See*—
Ezer, Elemer; Szporny, Laszio; Forgach, Lilla; Palosi, Eva; Cholnoky, Eszter; Karpati, Egon; Hajos, Gyorgy; Hortobagyi, Gyozo; and Gidai, Katalin, 4,198,402, Cl. 424-232.000.

Kasa, Zoltan, to Medicor Muvek. Process and apparatus for patient danger recognition and forecasting of a danger condition, especially in case of intensive medical care. 4,197,854, Cl. 128-630.000.

Kaspar, Vaclav; Molls, Hans-Heinz; Hornle, Reinhold; and Hummes, Ferdinand, to Bayer Aktiengesellschaft. Process and apparatus for spray drying or spray cooling. 4,198,264, Cl. 159-4.00B.

Kasper, James R., to Boeing Company, The. Method of making an integral structural member. 4,197,978, Cl. 228-173.00A.

Kastec Corporation: *See*—
Kaster, Robert L.; Mehl, Donald N.; and Klemetsrud, Kathryn A., 4,197,593, Cl. 3-1.500.

Kaster, Robert L.; Mehl, Donald N.; and Klemetsrud, Kathryn A., to Kastec Corporation. Rotatably positionable heart valve and method. 4,197,593, Cl. 3-1.500.

Katayama, Hiroyuki; Inatomi, Makoto; Kajioka, Hiroyuki; Nakamura, Yasushi; Ito, Michihisa; Harashima, Kazuumi; and Ohno, Takamasa, to Nippon Steel Corporation. Method of dephosphorization of metal or alloy. 4,198,229, Cl. 75-53.000.

Kato, Hideo, to Hokuriku Pharmaceutical Co., Ltd. Alkyl N-(3-trifluoromethylphenyl)-anthranilate. 4,198,431, Cl. 424-310.000.

Kato, Kunihiro: *See*—
Ishigaki, Yukinobu; Muraoka, Teruo; Hagihara, Masaki; Nasu, Takeo; and Kato, Kunihiro, 4,198,609, Cl. 329-136.000.

Katsumi, Yasuo: *See*—
Yamada, Takuro; Katsumi, Yasuo; and Matsuda, Shoei, 4,197,679, Cl. 51-281.00C.

Katunuma, Tatuo: *See*—
Mabuchi, Kenichi; and Katunuma, Tatuo, 4,197,672, Cl. 46-254.000.

Kauffman, William J.; and Lilley, George L., to Armstrong Cork Company. Process of forming an embossed surface covering. 4,198,448, Cl. 427-244.000.

Kawada, Tousuke: *See*—
Asai, Koichi; and Kawada, Tousuke, 4,197,638, Cl. 29-741.000.

Kawai, Masahiko: *See*—
Mehada, Masashi; Kawai, Masahiko; Sasaki, Mitsuo; and Kimura, Tohru, 4,198,278, Cl. 204-129.750.

Kawai, Nobutaka: *See*—
Shioiri, Takayuki; Kawai, Nobutaka; and Ban, Masatoshi, 4,198,510, Cl. 546-22.000.

Kayaba Kogyo K.K.: *See*—
Imai, Kiyonori, 4,197,929, Cl. 188-320.000.

Kaye, Roger A.: *See*—
Bell, Gordon D.; Bratton, Ronald E.; Kennedy, Robert J., Jr.; Smith, Kendall S., II; and Kaye, Roger A., 4,197,611, Cl. 16-116.00R.

Kazmierzak, Andrew F.: *See*—
Johannesen, Donald D.; Holcomb, Orla Lee, Jr.; and Kazmierzak, Andrew F., 4,197,927, Cl. 188-77.00R.

KCE Kiss Consulting Engineers Verfahrenstechnik GmbH: *See*—
Kiss, Gunter H., 4,198,460, Cl. 428-284.000.

Kearney & Trecker Corporation: *See*—
Caddell, Richard W., 4,198,699, Cl. 365-230.000.

Keck, Volkmar: *See*—
Weber, Otto; Keck, Volkmar; and Engelking, Rolf, 4,197,922, Cl. 181-229.000.

Keil, Karl-Heinz: *See*—
von der Eltz, Hans-Ulrich; Lehmann, Joachim W.; Ungermann, Erwin; Humuller, Edwin; Keil, Karl-Heinz; and Ribka, Joachim, 4,198,204, Cl. 8-21.00R.

Keith, Charles H., to Celanese Corporation. Smoking material. 4,197,861, Cl. 131-2.000.

Kelatron Pharmaceutical Division of Intermountain Laboratories Inc.: *See*—
Fouad, M. Taher A., 4,198,399, Cl. 424-177.000.

Keller, Herbert, to Kraftwerk Union Aktiengesellschaft. Screening member for separating solids from gaseous media. 4,198,220, Cl. 55-442.000.

Keller, Leon B.; and Jenkins, Robert K., to Hughes Aircraft Company. Polymeric fiber masses, fibers therefrom, and processes for producing the same. 4,198,461, Cl. 428-288.000.

Kelly, Edward. Sensing system for automatically opening garage doors. 4,197,675, Cl. 49-31.000.

Kelsey, Donald R., to Union Carbide Corporation. Preparation of di-tertiary peroxides. 4,198,528, Cl. 568-578.000.

Kemter, Heinz: *See*—
Ehedy, Gustav; Kemter, Heinz; Ponitz, Wilfried; Ehrlich, Engelbert; Politze, Walter; Scholtis, Walter; and Wunsch, Wolfgang, 4,197,723, Cl. 66-85.00A.

Kendall Company, The: *See*—
Samour, Carlos M.; and Richards, Mildred C., 4,198,520, Cl. 560-83.000.

Kennametal Inc.: *See*—
Heaton, James W.; Warren, Donald W.; and Albrecht, Albert B., 4,197,771, Cl. 82-36.00B.

Kennedy, Robert J., Jr.: *See*—
Bell, Gordon D.; Bratton, Ronald E.; Kennedy, Robert J., Jr.; Smith, Kendall S., II; and Kaye, Roger A., 4,197,611, Cl. 16-116.00R.

Kersten, Andrianus M.: *See*—
Verhoeven, Martinus C. M.; Kersten, Andrianus M.; and Serio, Giovanni, 4,198,587, Cl. 313-402.000.

Kie Sioe Tan, Jozef I.: *See*—
Schulman, Joseph H.; and Kie Sioe Tan, Jozef I., 4,197,850, Cl. 128-419.0PG.

Kilayko, Enrique L.: *See*—
Schieferstein, Robert J.; and Kilayko, Enrique L., 4,197,875, Cl. 137-533.110.

Killat, George R.: *See*—
Evani, Syamalarao; and Killat, George R., 4,198,269, Cl. 162-164.0EP.

Killion, Derling G., to Cubic Corporation. Parabolic and log periodic antennas combined for compact high-gain broadband antenna system. 4,198,639, Cl. 343-727.000.

Kim, Leo; and Tang, Sunny C., to Shell Oil Company. Internal olefin hydroformylation process. 4,198,352, Cl. 260-604.0HF.

Kimura, Hiroyuki: *See*—
Nishijima, Hideo; Fukushima, Isao; and Kimura, Hiroyuki, 4,198,602, Cl. 455-307.000.

Kimura, Tohru: *See*—
Mehada, Masashi; Kawai, Masahiko; Sasaki, Mitsuo; and Kimura, Tohru, 4,198,278, Cl. 204-129.750.

Kinbrace Pty. Ltd.: *See*—
Brown, Alvin, 4,198,472, Cl. 428-538.000.

Kinetics Container Corporation: *See*—
Wharton, Paul B., Jr., 4,197,788, Cl. 93-36.010.

King, Danny L. Glazing tool. 4,197,605, Cl. 7-105.000.

King, Judson: *See*—
Valdes-Krieg, Ernesto; King, Judson; and Sephton, Hugo H., 4,198,297, Cl. 210-44.000.

Kinninger, James L. Combined road marker and interchangeable sign cards. 4,197,808, Cl. 116-63.00C.

Kinrade, John D.: *See*—
Robbins, John C.; and Kinrade, John D., 4,198,568, Cl. 250-459.00R

Kirchberger, Wolfgang: *See*—
Kob, Adolf; Blatner, Eduard; Bielmeier, Heihz; Kirchberger, Wolfgang; and Gersmann, Klaus, 4,198,075, Cl. 280-753.000.

Kirchnerova, Jitka; and Falconer, Errol L., to Canadian Industries Limited. Explosive compositions containing sulphonated guar gum derivatives. 4,198,253, Cl. 149-44.000.

Kirchweger, Karl: *See*—
Fachbach, Heinz; Thien, Gerhard; and Kirchweger, Karl, 4,197,826, Cl. 123-198.00E.

Kirincich, Joseph G.: *See*—
Cilderman, Janis J.; and Kirincich, Joseph G., 4,198,196, Cl. 425-123.000.

Kirk, Bradley S.; and Kirschner, Mark J., to Airco, Inc. Oxygen delignification of wood pulp. 4,198,266, Cl. 162-29.000.

Kirkpatrick, John D., to Pittsburgh Corning Corporation. Process for making a cellulated vitreous material. 4,198,224, Cl. 65-22.000.

Kirschner, Mark J.: *See*—
Kirk, Bradley S.; and Kirschner, Mark J., 4,198,266, Cl. 162-29.000.

Kirschstein, Werner P., to Loew's Theatres, Inc. Apparatus and method for measuring an object. 4,198,165, Cl. 356-383.000.

Kishigami, Jun: *See*—
Matsuda, Atsushi; Kishigami, Jun; and Nishimura, Masaaki, 4,198,550, Cl. 179-181.00F.

Kiss, Gunter H., to KCE Kiss Consulting Engineers Verfahrenstechnik GmbH. Fibre mat for the dry production of compressed mouldings. 4,198,460, Cl. 428-284.000.

Kitamura, Takashi: *See*—
Masegi, Koichi; and Kitamura, Takashi, 4,198,154, Cl. 355-5.000.

Kiwala, Jacob: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joaquin; Kiwala, Jacob; and Schreiber, William L., 4,198,309, Cl. 252-174.110.

Klebanoff, Leonard. Thermostat control device. 4,197,992, Cl. 236-46.00R.

Kleber, Kurt. Method of producing edge-printed fabric garment pieces. 4,198,202, Cl. 8-2.50R.

Klein, Michael, to Cluett, Peabody & Co., Inc. Sport glove. 4,197,592, Cl. 2-161.00A.

Klein, Thomas A.: *See*—
De Fouw, Eugene A.; Klein, Thomas A.; and Rhodes, William A., 4,197,952, Cl. 211-191.000.

Kleinschmidt, Peter, to Siemens Aktiengesellschaft. Circuit arrangement for ultrasonic burglar security systems operating in accordance with the Doppler principle. 4,198,618, Cl. 367-94.000.

Klemetsrud, Kathryn A.: *See*—
Kaster, Robert L.; Mehl, Donald N.; and Klemetsrud, Kathryn A., 4,197,593, Cl. 3-1.500.

Kleveland, Sigbjorn: *See*—
Andreassen, Knut A.; Johnsen, Henry K.; Solheim, Peder R.; and Kleveland, Sigbjorn, 4,198,282, Cl. 204-243.00R.

Kley, Hans-Peter: *See*—
Eistetter, Klaus; and Kley, Hans-Peter, 4,198,424, Cl. 424-274.000.

Klinkenberg, Willem P., to Machinefabriek en Constructiewerkplaats Gebr. Klinkenberg B.V. Conveyor for bulk materials. 4,197,938, Cl. 198-716.000.

Kluger, Michael A., to Bendix Corporation, The. Brake shoe guide and wheel cylinder retainer for a drum brake. 4,197,928, Cl. 188-206.00A.

Knapp, Orville J. Hose winding apparatus. 4,198,010, Cl. 242-86.200.

Knepp, Wayne A.; and Fehr, David A., to Morton Buildings, Inc. Timber connectors. 4,198,175, Cl. 403-191.000.

Knight, George W.: *See*—
Birkelbach, Donald F.; and Knight, George W., 4,198,315, Cl. 252-429.00B.

Knollmueller, Karl O., to Olin Corporation. Preparation of trialkoxysilanols. 4,198,346, Cl. 556-463.000.

Knowlton, Kenneth C., to Bell Telephone Laboratories, Incorporated. High resolution display. 4,198,158, Cl. 355-54.000.

Kob, Adolf; Blatner, Eduard; Bielmeier, Heinz; Kirchberger, Wolfgang; and Gersmann, Klaus, to Bayerische Motoren Werke Aktiengesellschaft. Safety installation in motor vehicles with a knee impact element. 4,198,075, Cl. 280-753.000.

Kobayashi, Kohroh, to Nippon Electric Co., Ltd. Optical wavelength-division multiplexing and demultiplexing device. 4,198,117, Cl. 350-96.190.

Kobayashi, Tsutomu, to Rockwell International Corporation. Self-biased structure for magnetic bubble domain devices. 4,198,692, Cl. 365-27.000.

Kobe, Inc.: *See*—
Erickson, John W., 4,198,218, Cl. 55-408.000.

Koda, N. John: *See*—
Alexander, David H.; Hershman, George H.; Jack, Michael D.; Koda, N. John; and Lloyd, Randahl B., 4,198,646, Cl. 357-30.000.

Koeda, Takemi; Tsuruoka, Takashi; Shibata, Uichi; Asaoka, Hiroyasu; Hachisu, Mitsugu; Itoh, Osamu; Sekizawa, Yasuharu; Inouye, Shigeharu; and Niida, Taro, to Meiji Seika Kaisha, Ltd. 5-Alkoxy-picolinic esters and anti-hypertensive composition containing 5-alkoxy-picolinic esters. 4,198,416, Cl. 424-266.000.

Koehler, Carlton L. Underwater instrument case. 4,197,747, Cl. 73-431.000.

Koga, Masataka: *See*—
Mayama, Shinji; Koga, Masataka; Arai, Yoji; and Oishi, Konosuke, 4,198,589, Cl. 315-267.000.

Kohayakawa, Yoshimi: *See*—
Matsumura, Isao; and Kohayakawa, Yoshimi, 4,198,144, Cl. 354-62.000.

Kohl, Arthur L., to Rockwell International Corporation. Absorption of sulfur oxides from hot gases. 4,198,380, Cl. 423-242.000.

Kohl, Karl, to Karl Mayer Textilmaschinenfabrik GmbH. Warp knitting machine with jacquard arrangement. 4,197,725, Cl. 66-213.000.

Kohler, Fritz: *See*—
Cole-Petit, Jackie; and Kohler, Fritz, 4,197,722, Cl. 66-75.200.

Koike, Takaaki: *See*—
Shimizu, Masami; and Koike, Takaaki, 4,198,063, Cl. 277-79.000.

Kollman, Gerald E.; and Irwin, Elwood N., to Rohm and Haas Company. Synergistic herbicidal compositions. 4,198,227, Cl. 71-115.000.

Komatsu, Fumito; Saito, Takeo; and Wakabayashi, Nobuaki, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Music box. 4,197,778, Cl. 84-95.00R.

Konig, Herbert: *See*—
Kriechbaum, Kurt; Walter, Herbert; Konig, Herbert; and Hartmannsgruber, Max, 4,197,614, Cl. 19-159.00R.

Konii, Susumu; Yoshida, Masatoshi; Yoshimura, Yukio; Ishibashi, Takehiko; and Sakamoto, Shizuo, to Hitachi Chemical Company, Inc. Process for producing neutralized phenol resins. 4,198,499, Cl. 528-146.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Yagi, Michio; Shiozawa, Kazuo; Suzuki, Kijiro; Aratame, Kazuhisa; Ishihara, Haruji; and Shimokawa, Ryushi, 4,198,142, Cl. 354-60.00R.

Konsetov, Vitaly V.; Kozlova, Galina I.; Orlova, Valentina G.; Dokukina, Ljudmila F.; Deryagina, Galina M.; Pavlova, Tatyana N.; Gavrichenkova, Eleonora A.; and Vasilieva, Natalia P. Apparatus for continuous preparation of acrylonitrilebutadienstyrene copolymer. 4,198,383, Cl. 422-134.000.

Koplow, Harold S.: *See*—
Corwin, Daniel W.; Koplow, Harold S.; Moros, David; and Anagnostopoulos, Paul, 4,198,685, Cl. 364-900.000.

Korber, Hermann, to Balda-Werke Photographische Gerate & Kunststoff GmbH & Co. K.G. Flashing device. 4,198,672, Cl. 362-7.000.

Korenowski, Theodore F., to Olin Corporation. Use of phosphogypsum for fire suppression. 4,197,913, Cl. 169-45.000.

Kornfeld, Edmund C.; and Bach, Nicholas J., to Eli Lilly and Company. Prolactin inhibiting octahydro pyrazolo[3,4-g]quinolines. 4,198,415, Cl. 424-258.000.

Korytkowski, Henry M.: *See*—
Rayfield, Wilson P.; Preston, Norman H.; Ferguson, Ronald W.; Dear, Frederick H.; Korytkowski, Henry M.; Muster, Frank L.; and Karns, Ward L., 4,197,797, Cl. 101-90.000.

Kowitz, Claus: *See*—
Kummer, Kenneth L.; Kramer, Heinz O.; Weyeneth, Stephan; and Kowitz, Claus, 4,198,183, Cl. 409-132.000.

Kozlova, Galina I.: *See*—
Konsetov, Vitaly V.; Kozlova, Galina I.; Orlova, Valentina G.; Dokukina, Ljudmila F.; Deryagina, Galina M.; Pavlova, Tatyana N.; Gavrichenkova, Eleonora A.; and Vasilieva, Natalia P., 4,198,383, Cl. 422-134.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Keller, Herbert, 4,198,220, Cl. 55-442.000.

Krajewski, Zdzislaw A. A., to Bayly Engineering Limited. Electronic signal processing system. 4,198,633, Cl. 343-119.000.

Kramer, David E., to Daniel Woodhead, Inc. Covers for electrical receptacles. 4,197,959, Cl. 220-242.000.

Kramer, David N.; Long, Stephen E.; and Schneider, Alan A., to Catalyst Research Corporation. Solvator plug. 4,198,281, Cl. 204-195.00R.

Kramer, Heinz O.: *See*—
Kummer, Kenneth L.; Kramer, Heinz O.; Weyeneth, Stephan; and Kowitz, Claus, 4,198,183, Cl. 409-132.000.

Kraus, Peter: *See*—
Oeckl, Siegfried; Genth, Hermann; Paulus, Wilfried; Rother, Heinz-Joachim; Stendel, Wilhelm; Brandes, Wilhelm; and Kraus, Peter, 4,198,428, Cl. 424-302.000.

Krautwald, Walter, to Paul & Co. Inh. K. Kunert & Sohne, Firma. Reinforcing sleeve for the ends of reel cores. 4,198,008, Cl. 242-68.600.

Krebs, Jorg; and Resele, Peter, to Steyr-Daimler-Puch Aktiengesellschaft. Gear. 4,197,759, Cl. 74-447.000.

Kremen, Jerome C., to Baxter Travenol Laboratories, Inc. Optical scrambler for depolarizing light. 4,198,123, Cl. 350-157.000.

Krider, Edmund P.; and Noggle, Ralph C., to University of Arizona Foundation, The. Gated lightning detection system. 4,198,599, Cl. 324-72.000.

Kriechbaum, Kurt; Walter, Herbert; Konig, Herbert; and Hartmannsgruber, Max, to Zinser Textilmaschinen GmbH. Cannister rotation mechanism. 4,197,614, Cl. 19-159.00R.

Krisko, William J., to United States of America, Army. Air inlet grille for engine compartment. 4,198,219, Cl. 55-440.000.

Kropp, Donald E.; and Caldwell, Glenn E., to Ceramic Coating Company, The. Low profile drive for agitator shaft of chemical reactor vessel. 4,198,373, Cl. 422-49.000.

Kubis, Charles S.: *See*—
Moller, Jens L.; and Kubis, Charles S., 4,197,732, Cl. 72-335.000.

Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; and Homma, Hiroshige, to Yamanouchi Pharmaceutical Co., Ltd. 1-Oxo-1,2-dihydroisoquinoline derivatives. 4,198,512, Cl. 546-142.000.

Kubota, Ltd.: *See*—
Ishiguro, Toshio, 4,198,074, Cl. 280-415.00A.

Kuehl, Guenter H.: *See*—
Ladov, Edwin N.; Law, Derek A.; and Kuehl, Guenter H., 4,198,207, Cl. 23-230.0HC.

Kuesters, Werner: *See*—
Bronstert, Bernd; Kuesters, Werner; Jun, Mong-Jon; and Wallbillich, Guenter, 4,198,241, Cl. 430-284.000.

Kulwicki, Bernard M., to Texas Instruments Incorporated. Compact PTC resistor. 4,198,669, Cl. 361-24.000.

Kumbrant, Lars A. T. Disposable sampling apparatus for obtaining samples from molten materials. 4,197,745, Cl. 73-425.40R.

Kummer, Kenneth L.; Kramer, Heinz O.; Weyeneth, Stephan; and Kowitz, Claus. Motion translation apparatus. 4,198,183, Cl. 409-132.000.

Kunz, Raymond W.: *See*—
Walter, Henry J.; and Kunz, Raymond W., 4,198,559, Cl. 219-387.000.

Kunzmann, Anton; and Kunzmann, Bernd, to Guk-Falzmaschinen Griesser & Kunzmann GmbH & Co. KG. Device for cutting a web into predetermined sections. 4,197,773, Cl. 83-209.000.

Kunzmann, Bernd: *See*—
Kunzmann, Anton; and Kunzmann, Bernd, 4,197,773, Cl. 83-209.000.

Kuo, Chang-Kiang, to Texas Instruments Incorporated. VMOS Read only memory. 4,198,693, Cl. 365-104.000.

Kuo, Chang-Kiang; and Tsaur, Shyh-Chang, to Texas Instruments Incorporated. Multiple dummy cell layout for MOS random access memory. 4,198,697, Cl. 365-210.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Enomoto, Satoru; Asano, Kiro; Tamura, Humio; and Tanaka, Hiromitsu, 4,198,405, Cl. 424-242.000.

Kurita, Toshiaki, to Tomy Kogyo Co., Inc. Game with reversible, self-propelled target object. 4,198,049, Cl. 273-119.00A.

Kurkovskaya, Violetta V.: *See*—
Shafranovsky, Alexandr V.; Ruchinsky, Vitaly R.; Olevsky, Viktor M.; Gavrilin, Vladimir P.; Chubukov, Vladimir K.; Gromoglasova, Valentina N.; Bushev, Vladimir S.; Baskov, Jury A.; Kurkovskaya, Violetta V.; Gurkov, Boris A.; and Evkin, Ivan F., 4,198,361, Cl. 261-89.000.

Kurtz, Bruce E.; and Fitch, Robert H., to Allied Chemical Corporation. Electrolysis of aqueous salt solutions. 4,198,277, Cl. 204-98.000.

Kurtz, Rudiger; Link, Christoph; Trudel, Wolfgang; and Reutter, Siegfried, to Sulzer Brothers Ltd. Head box for a paper making machine. 4,198,270, Cl. 162-343.000.

Kuze, Takashi; Makio, Hajime; and Baba, Yukio, to Tokyo Shibaura Denki Kabushiki Kaisha; and Nippon Electric Glass Co., Ltd. Anode button for a cathode ray tube. 4,198,588, Cl. 313-479.000.

Kwasnoski, Daniel: *See*—
Laslo, Joseph A.; Tarhan, Mehmet O.; Sheldrake, Charles W.; and Kwasnoski, Daniel, 4,198,386, Cl. 423-574.00R.
Laslo, Joseph A.; and Kwasnoski, Daniel, 4,198,388, Cl. 423-574.00R.

La Gard, Inc.: *See*—
Uyeda, Tim M., 4,197,726, Cl. 70-332.000.

Laber, Hans, to Siemens Aktiengesellschaft. Circuit arrangement for detecting grounds in a static converter. 4,198,628, Cl. 340-650.000.

Laberteaux, John K.: *See*—
Laslo, Joseph A.; and Laberteaux, John K., 4,198,387, Cl. 423-574.00R.

Lachevre, Christian: *See*—
Jolivet, Yannick; and Lachevre, Christian, 4,198,497, Cl. 526-310.000.

Ladov, Edwin N.; Law, Derek A.; and Kuehl, Guenter H., to Mobil Oil Corporation. Determination of water content in presence of oils. 4,198,207, Cl. 23-230.0HC.

LaFever, Clifford E.; and Washburn, William J., to Ford Aerospace & Communications Corporation. Ammunition round. 4,197,801, Cl. 102-38.0CC.

Laguna, Mfg.: *See*—
Johenning, Jeb B., 4,197,602, Cl. 5-286.000.

Lajos, Robert E.: *See*—
Busta, Heinz H.; Lajos, Robert E.; and Bhasin, Kul B., 4,198,261, Cl. 156-626.000.

Lal, Joginder; and Walters, Sandra J., to Goodyear Tire & Rubber Company, The. Composition and method of improving the green strength of unvulcanized elastomers. 4,198,324, Cl. 260-4.00R.

Lammers, Walter, to Dethmers Manufacturing Company. Boom stabilizing support assembly. 4,197,999, Cl. 239-166.000.

Lampka, Bruno; and Lampka, Hildegard. Tooth-brush arrangement. 4,198,171, Cl. 401-269.000.

Lampka, Hildegard: *See*—
Lampka, Bruno; and Lampka, Hildegard, 4,198,171, Cl. 401-269.000.

Lancelot, B. Harry, III; and MacRobbie, Robert M., to Brown Company. Aligner tie. 4,197,783, Cl. 85-9.00W.

Land, Edwin H., to Polaroid Corporation. Method and apparatus for eliminating undesirable blemishes in coating of processing fluid. 4,198,152, Cl. 354-317.000.

Lane, Derek; Farr, Thomas G.; and Galles, Stuart L., to said Thomas Farr; by said Derek Lane; and said Stuart Galles; by said Derek Lane. Chalk line dispenser. 4,197,656, Cl. 33-414.000.

Lane, Martyn S.: *See*—
Cadle, Terence M.; Lane, Martyn S.; and Johnson, Trevor K., 4,198,234, Cl. 75-247.000.

Lang, Gerard: *See*—
Jacquet, Bernard; and Lang, Gerard, 4,197,865, Cl. 132-7.000.

Langdon, William K.: *See*—
Login, Robert B.; Langdon, William K.; and Camp, Ronald L., 4,198,464, Cl. 428-361.000.

Langford, Terrence R.; and Rehm, Ernest L. Soil stabilizer including two banks of plough shares. 4,197,917, Cl. 172-686.000.

Lanier Business Products, Inc.: *See*—
Titus, Theodore, IV, 4,198,549, Cl. 179-100.1DR.

Laqua, Arnold; Holtschmidt, Ulrich; Schamberg, Eckehard; and Hellwig, Dieter, to Th. Goldschmidt AG. Process for the preparation of solutions of urea-formaldehyde resins for the impregnation and coating of carrier webs for coating the surface of wood-based panels. 4,198,332, Cl. 260-29.4UA.

Laroche, Pierre; and Rase, Jean, to BFG Glassgroup. Vitreous sheets with synthetic polymer spacer and process for making the same. 4,198,254, Cl. 156-107.000.

Larson, Paul E., to Hach Chemical Company. Low turbidity nephelometer. 4,198,161, Cl. 356-339.000.

Laslo, Joseph A.; Tarhan, Mehmet O.; Sheldrake, Charles W.; and Kwasnoski, Daniel, to Bethlehem Steel Corporation. Selective removal of a gaseous component from a multi-component gas stream. 4,198,386, Cl. 423-574.00R.

Laslo, Joseph A.; and Laberteaux, John K., to Bethlehem Steel Corporation. Maintaining the selective removal of H_2S from a variably flowing gas stream containing H_2S and CO_2. 4,198,387, Cl. 423-574.00R.

Laslo, Joseph A.; and Kwasnoski, Daniel, to Bethlehem Steel Corporation. Selective removal of H_2S from an H_2S and CO_2 containing gas stream. 4,198,388, Cl. 423-574.00R.

Lass, Harold M., to Corban Industries, Inc. Corner roller tool for taping dry wall. 4,197,624, Cl. 29-110.500.

Laurie, William A., to Fiberite Corporation. Printing matrix or mold component formed from an aminoplast resin-polyvinyl alcohol reaction product. 4,198,364, Cl. 264-226.000.

Law, Derek A.: *See*—
Ladov, Edwin N.; Law, Derek A.; and Kuehl, Guenter H., 4,198,207, Cl. 23-230.0HC.

Lawler, Edward B.: *See*—
Dixon, Carole M.; and Lawler, Edward B., 4,198,462, Cl. 428-290.000.

Laxo, Darryl E. Electronic sextant. 4,197,653, Cl. 33-268.000.

Laxo, Darryl E., to United States of America, Navy. Selective weight release. 4,197,806, Cl. 114-331.000.

Lay, Kenneth G. Passive exercise apparatus. 4,197,839, Cl. 128-69.000.

Layton, Wilbur T., to Burroughs Corporation. Bubble memory package with thermal control. 4,198,687, Cl. 365-2.000.

Layton, Wilbur T., to Burroughs Corporation. Thermal control members, bubble memory. 4,198,688, Cl. 365-2.000.

Lazzari, Jean P.; and Desserre, Jean, to Compagnie Internationale pour l'Informatique. Magnetic head platform incorporating at least one integrated transducer. 4,198,667, Cl. 360-123.000.

Lazzari, Jean-Pierre, to Compagnie Internationale pour l'Informatique. Device for detecting magnetic fields and method of making same. 4,197,987, Cl. 235-449.000.

Lear Siegler, Inc.: *See*—
De Fouw, Eugene A.; Klein, Thomas A.; and Rhodes, William A., 4,197,952, Cl. 211-191.000.

Le Craw, Roy C.: *See*—
Gyorgy, Ernst M.; Le Craw, Roy C.; and Wolfe, Raymond, 4,198,689, Cl. 365-8.000.

Le Davay, Louis; and Jocteur, Robert, to Les Cables de Lyon. Coating for optical fibres. 4,198,121, Cl. 350-96.300.

Lee, James K.: *See*—
Frank, Lee F.; and Lee, James K., 4,198,140, Cl. 354-50.000.

Leech, Brad G.; and Hayes, Richmond S., Jr., to Carrier Corporation. Mounting clip for a tube sheet. 4,197,906, Cl. 165-76.000.

LeGrand, Donald G.; and Vitale, Gina G., to General Electric Company. Tris[poly(aryloxysiloxane)] polymers. 4,198,498, Cl. 528-38.000.

Lehmann, Joachim W.: *See*—
von der Eltz, Hans-Ulrich; Lehmann, Joachim W.; Ungermann, Erwin; Humuller, Edwin; Keil, Karl-Heinz; and Ribka, Joachim, 4,198,204, Cl. 8-21.00R.

Lehmann, Ulrich: *See*—
Fuhrmann, Ernest; and Lehmann, Ulrich, 4,197,711, Cl. 60-602.000.

Leiber, Heinz, to Robert Bosch GmbH. Hydraulic brake booster. 4,197,710, Cl. 60-547.00A.

Leigh Products, Inc.: *See*—
Imhoff, William B., 4,198,082, Cl. 292-67.000.

Leimgruber, Willy: *See*—
Batcho, Andrew D.; and Leimgruber, Willy, 4,198,501, Cl. 542-443.000.

Leino, Ilkka M.; and Leino, Martti H. Procedure for drying an organic, most appropriately axylogenic material, such as veneers for instance. 4,197,657, Cl. 34-15.000.

Leino, Martti H.: *See*—
Leino, Ilkka M.; and Leino, Martti H., 4,197,657, Cl. 34-15.000.

Le Jeune, Gwenole J. C., to Societe Civile Hydromer. Food and method for its preparation. 4,198,440, Cl. 426-641.000.

LeMasson, Jacques C. Inventory board. 4,197,810, Cl. 116-323.000.

LeMere, Roger: *See*—
Hughes, Francis H.; Morton, Kenneth O.; LeMere, Roger; and Brown, Fred A., III, 4,198,041, Cl. 271-9.000.

Lemmon, Newton R. Toilet. 4,197,598, Cl. 4-326.000.

Leonard, John P.: *See*—
Yates, Robert E.; Leonard, John P.; and Alongi, Robert E., 4,198,015, Cl. 244-3.150.

Lerch, Ulrich: *See*—
Bartmann, Wilhelm; Beck, Gerhard; Lerch, Ulrich; and Scholkens, Bernward, 4,198,429, Cl. 424-305.000.

Lermann, Peter: *See*—
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,198,136, Cl. 352-169.000.

Lerner, Melvin; Hood, Lyal V.; Rommel, Marjorie A.; Pettitt, Bruce C.; and Erikson, Charles M., to United States of America, National Aeronautics and Space Administration. Method and apparatus for vapor detection. 4,198,208, Cl. 23-232.00R.

Les Cables de Lyon: *See*—
Le Davay, Louis; and Jocteur, Robert, 4,198,121, Cl. 350-96.300.

Lesche, Wolfgang, to Siemens Aktiengesellschaft. Circuit arrangement responsive to control signals for generating and storing a variable electrical analog signal. 4,198,575, Cl. 328-133.000.

Leung, Chun-Keung, to Bendix Corporation, The. Warm up control for closed loop engine roughness fuel control. 4,197,767, Cl. 74-860.000.

Leuven Research & Development V.Z.W.: *See*—
Collen, Desire J., 4,198,335, Cl. 260-112.00B.

Lever Brothers Company: *See*—
Edwards, John R., 4,197,962, Cl. 220-461.000.

Levine, Nathan M.; and Von Drathen, Walter, to Celanese Polymer Specialties Company. Desliming of potash ores. 4,198,288, Cl. 209-5.000.

Lewin, Arthur, to Siemens Aktiengesellschaft. Device for measuring the location, the attitude and/or the change in location or, respectively, attitude of a rigid body in space. 4,197,855, Cl. 128-653.000.

Lewis, Robert A., to Chevron Research Company. Deposit control and dispersant additives. 4,198,306, Cl. 252-51.50R.

Leybold-Heraeus GmbH & Co. Kommanditgesellschaft: *See*—
Beinitz, Karl; and Kaltenbach, Volker, 4,198,607, Cl. 328-143.000.

Li, Hsueh M.: *See*—
Hornbaker, Edwin D.; and Li, Hsueh M., 4,198,381, Cl. 423-300.000.

Liao, Paul F.: *See*—
Bjorklund, Gary C.; Bloom, David M.; and Liao, Paul F., 4,198,162, Cl. 356-349.000.

Liebe, Jurgen: *See*—
Freiberg, Bernd-Rainer; Gehl, Wilfried; Liebe, Jurgen; and Muschelknautz, Horst, 4,197,742, Cl. 73-362.0CP.

Liedberg, Kurt H., to Atlas Copco Aktiebolag. Spraying device. 4,197,994, Cl. 239-61.000.

Lilley, George L.: *See*—
Kauffman, William J.; and Lilley, George L., 4,198,448, Cl. 427-244.000.

Lincoln Manufacturing Company, Inc.: *See*—
Bell, Gordon D.; Bratton, Ronald E.; Kennedy, Robert J., Jr.; Smith, Kendall S., II; and Kaye, Roger A., 4,197,611, Cl. 16-116.00R.

Linczmajer, Janos J. Flexible airframe flying wing. 4,198,019, Cl. 244-123.000.

Link, Christoph: *See*—
Kurtz, Rudiger; Link, Christoph; Trudel, Wolfgang; and Reutter, Siegfried, 4,198,270, Cl. 162-343.000.

Lion Fat & Oil Co., Ltd., The: *See*—
Mandai, Hiroshi; Tominaga, Anri; Yoshimura, Yoshikazu; and Isa, Hiroshi, 4,198,534, Cl. 585-16.000.

Liquid Control Incorporated: *See*—
Penn, Laurence R., 4,198,168, Cl. 366-336.000.

Liquid Metronics Incorporated: *See*—
Schieferstein, Robert J.; and Kilayko, Enrique L., 4,197,875, Cl. 137-533.110.

Lischin, Alan J.: *See*—
Haist, Melval C.; and Lischin, Alan J., 4,198,545, Cl. 179-6.310.

Lishevskaya, Marina O.; Morin, Boris P.; Stanchenko, Galina I.; Vanjushkina, Tatyana A.; and Rogovin, Zakhar A. Method for preparing modified graft copolymers of cellulose with monovinyl monomers in the presence of a divinylbenzene modifier. 4,198,326, Cl. 260-17.4GC.

Littrell, George R., Jr.: *See*—
Ray, Louis M., Jr.; Littrell, George R., Jr.; Buckland, Arliff E., Jr.; and Brett, Gordon D., 4,198,177, Cl. 404-75.000.

Livesay, Fred C., Jr.: *See*—
Haverdink, Virgil D.; Maust, John E., Jr.; and Livesay, Fred C., Jr., 4,197,916, Cl. 171-58.000.

Livezey, Robert L., Jr.: *See*—
Varnum, Tracy L.; and Livezey, Robert L., Jr., 4,198,676, Cl. 364-557.000.

Lloyd, Randahl B.: *See*—
Alexander, David H.; Hershman, George H.; Jack, Michael D.; Koda, N. John; and Lloyd, Randahl B., 4,198,646, Cl. 357-30.000.

Lo, David S.: *See*—
Nelson, George F.; Cosimini, Gregory J.; Johnson, Leslie H.; Lo, David S.; Paul, Maynard C.; and Torok, Ernest J., 4,198,686, Cl. 365-79.000.

Lobbe, Armin, to Gewerkschaft Eisenhutte Westfalia. Mineral winning installations. 4,198,098, Cl. 299-34.000.

Lobdell, Donn D., to Cobe Laboratories, Inc. Fluid valve. 4,197,876, Cl. 137-625.470.

Locatelli, Renato: *See*—
Bertelli, Guido; Roma, Pierpaolo; and Locatelli, Renato, 4,198,328, Cl. 260-22.00A.

Loew's Theatres, Inc.: *See*—
Kirschstein, Werner P., 4,198,165, Cl. 356-383.000.

Login, Robert B.; Langdon, William K.; and Camp, Ronald L., to BASF Wyandotte Corporation. Fiber lubricants based upon ethylene oxide capped polyethers of tetrahydrofuran and ethylene oxide. 4,198,464, Cl. 428-361.000.

Lohr, Raymond J. Target game with moving indicator. 4,198,046, Cl. 273-315.000.

Lohr, Raymond J. Toy vehicle. 4,198,071, Cl. 280-218.000.

Long, Stephen E.: *See*—
Kramer, David N.; Long, Stephen E.; and Schneider, Alan A., 4,198,281, Cl. 204-195.00R.

Loquenz, Heinz: *See*—
Feldbaumer, Erich; Loquenz, Heinz; and Sandri, Alfred, 4,198,385, Cl. 423-566.000.

Lord Corporation: *See*—
Fonda, James B.; Swanson, Howard B., Jr.; and Howard, Dennis D., 4,198,200, Cl. 431-360.000.

L'Oreal: *See*—
Jacquet, Bernard; and Lang, Gerard, 4,197,865, Cl. 132-7.000.

Lorenze, Robert V., Jr.; and White, William J., to Honeywell, Inc. Hybrid mosaic IR/CCD focal plane. 4,197,633, Cl. 29-577.00R.

Losee, Kathryn A.; and Bernstein, Jack, to E. R. Squibb & Sons, Inc. Mercaptoacylpiperazine carboxylic acid compounds. 4,198,509, Cl. 544-388.000.

Louis N. Graves Co., Inc.: *See*—
Graves, Louis N., 4,197,677, Cl. 51-214.000.

Lowe, Frederick G.; and Bollons, Bernard, to UOP Inc. Vehicle seats. 4,198,025, Cl. 248-550.000.

Luber, Edward J., Jr.: *See*—
Warner, Paul L., Jr.; and Luber, Edward J., Jr., 4,198,508, Cl. 544-346.000.

Luboshez, Sergius N. Method of multi-sheet pleating. 4,198,366, Cl. 264-129.000.

Lucas Industries Limited: *See*—
Green, Stanley, 4,198,182, Cl. 409-132.000.

Luenser, Werner R., to Ethyl Products Company. Tamper-proof closure. 4,197,955, Cl. 215-252.000.

Luke, Roger D.; and Rhodes, John M., to Gould Inc. Integral bus bar contact stab structure. 4,198,107, Cl. 339-22.00B.

Lukens Steel Company: *See*—
Miller, Samuel L., 4,197,898, Cl. 164-4.000.
Roper, Charles R., Jr.; and Hetherington, Roy, Jr., 4,198,249, Cl. 148-36.000.

Lummus Company, The: *See*—
Tsao, Utah, 4,198,212, Cl. 48-210.000.

Lundberg, Bo: *See*—
Carlstrom, Per; Lundberg, Bo; and Persson, Gert, 4,198,178, Cl. 404-112.000.

Lusch, Charles. Multi-purpose human harness. 4,197,816, Cl. 119-96.000.

Lusk, George E., to Josyln Mfg. and Supply Co. Suspension insulator. 4,198,538, Cl. 174-140.00S.

Lyons, Bernard J.; Cammack, Travers K., II; and Nyberg, David D., to Raychem Corporation. High voltage insulating compositions containing organic polymerizable phosphorus compounds. 4,198,310, Cl. 252-63.200.

M.A.N. Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft: *See*—
Bulang, Wolfgang, 4,197,713, Cl. 62-94.000.

Maatje, Henri; and Spannagel, Richard, to International Standard Electric Corporation. Vehicle control unit. 4,198,678, Cl. 364-426.000.

Mabuchi, Kenichi; and Katunuma, Tatuo, to Mabuchi Motor Co. Ltd. Model racing car. 4,197,672, Cl. 46-254.000.

Mabuchi Motor Co. Ltd.: *See*—
Mabuchi, Kenichi; and Katunuma, Tatuo, 4,197,672, Cl. 46-254.000.

MAC Valves, Inc.: *See*—
Neff, James A., 4,197,874, Cl. 137-270.000.

Maccario, Ermanno: *See*—
Albani, Alfonso; and Maccario, Ermanno, 4,198,682, Cl. 364-900.000.

MacDonald, Murdo A., to Clyde Corporation. Fastener driving tool and fastener holding nosepiece. 4,197,886, Cl. 144-32.00R.

Machacek, LaVerne D. Gate latching device. 4,198,086, Cl. 292-246.000.

Machinefabriek en Constructiewerkplaats Gebr. Klinkenberg B.V.: *See*—
Klinkenberg, Willem P., 4,197,938, Cl. 198-716.000.

MacIntyre, Iain: *See*—
Hudson, Derek; Sharpe, Robert; Szelke, Michael; MacIntyre, Iain; and Fink, George, 4,198,398, Cl. 424-177.000.

MacMillan, Deane B.: *See*—
Donigan, Carolyn L.; MacMillan, Deane B.; and Srock, James H., 4,198,671, Cl. 361-306.000.

MacRobbie, Robert M.: *See*—
Lancelot, B. Harry, III; and MacRobbie, Robert M., 4,197,783, Cl. 85-9.00W.

Maeda, Tetsuya: *See*—
Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; Yamazaki, Atsuki; Tamazawa, Kazaharu; Murase, Kiyoshi; and Shibanuma, Tadao, 4,198,339, Cl. 549-89.000.

Maeda, Toshiyuki: *See*—
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,198,195, Cl. 418-133.000.

Maguire, Sara B. Sleeping bag construction. 4,197,601, Cl. 5-416.000.

Mahieu, William R., to A. B. Chance Company. Full range current limiting fuse having high load current carrying capacity. 4,198,615, Cl. 337-162.000.

Mahoney, Fred G.; and Harpman, Webster B., to Econo Fuel Systems, Inc. Hot fuel gas generator. 4,197,819, Cl. 123-25.00B.

Mair, Franz, to Erhard & Leimer KG. Apparatus for flattening the bent-up edge of a sheet workpiece. 4,197,621, Cl. 26-98.000.

Makio, Hajime: *See*—
Kuze, Takashi; Makio, Hajime; and Baba, Yukio, 4,198,588, Cl. 313-479.000.

Maklad, Mokhtar S.: *See*—
Goell, James E.; and Maklad, Mokhtar S., 4,198,223, Cl. 65-3.00A.

Mandai, Hiroshi; Tominaga, Anri; Yoshimura, Yoshikazu; and Isa, Hiroshi, to Lion Fat & Oil Co., Ltd., The. Cosmetic base material. 4,198,534, Cl. 585-16.000.

Mande, Irving; and Right, Robert W., to General Signal Corporation. Dual alarm detection on single loop. 4,198,625, Cl. 340-517.000.

Mandigo, Frank N.; and Breedis, John F., to Olin Corporation. High conductivity and softening resistant copper base alloys and method therefor. 4,198,248, Cl. 148-2.000.

Maneva, Lilyana S.: *See*—
Golovinski, Evgeni V.; Alexiev, Boris V.; Spassov, Alexander V.; Stoev, Stoycho B.; Maneva, Lilyana S.; Emanuilov, Emanuil A.; Stoychev, Tzanko S.; and Angelov, Ivan I., 4,198,433, Cl. 424-320.000.

Mann, Gamdur S., to General Motors Corporation. Capacitive pressure transducer. 4,198,670, Cl. 361-283.000.

Mannatt, Scott A., to Garrett Corporation, The. Self adjusting oxygen enrichment system. 4,198,213, Cl. 55-16.000.

Mansfeld, Manfred: *See—*
Stuiber, Walter; Mansfeld, Manfred; Geis, Heinz; and Teichmann, Friedrich, 4,198,169, Cl. 400-144.200.

Manz, Curtis T. Toothpick dispenser. 4,197,965, Cl. 221-266.000.

Manzke, Klaus; Brotzler, Roland; Berg, Gerhard; and Uhl, Karl, to BASF Aktiengesellschaft. Positioning device for a write/read magnetic head in a magnetic-disc data storage device. 4,198,666, Cl. 360-106.000.

Mappes, Celia J.: *See—*
Rentzea, Costin; Pommer, Ernst-Heinrich; Mappes, Celia J.; and Zeeh, Bernd, 4,198,423, Cl. 424-273.00R.

Maran, Victor J., to Dispenser Corporation. Airless sprayer and pressurizing system. 4,197,884, Cl. 141-383.000.

Marciandi, Franco, to Montedison S.p.A. Self-extinguishing polymeric compositions. 4,198,493, Cl. 525-164.000.

Mariani, Remo, to Thomas & Betts Corporation. Connector. 4,198,537, Cl. 174-65.00R.

Marion, Roland M., to General Electric Company. Numerical display using plural light sources and having a reduced and substantially constant current requirement. 4,198,629, Cl. 340-761.000.

Mark, Harold W.: *See—*
Bertus, Brent J.; McKay, Dwight L.; and Mark, Harold W., 4,198,317, Cl. 252-411.00R.

Markusch, Peter: *See—*
Scholl, Hans-Joachim; Dieterich, Dieter; Markusch, Peter; and Welte, Rainer, 4,198,487, Cl. 521-122.000.

Marsh, Brian: *See—*
Wright, Donald C.; and Marsh, Brian, 4,198,226, Cl. 65-114.000.

Marsh, Walter H. W., to Singer Company, The. Visual aid improvement to a presser device for sewing buttonholes. 4,197,803, Cl. 112-77.000.

Marti, Heinrich: *See—*
Streubel, Hans; and Marti, Heinrich, 4,197,904, Cl. 164-448.000.

Martin, Eoudis. Self-righting thrown or rolled spherical fire extinguisher. 4,197,915, Cl. 169-72.000.

Martin, Larry C.: *See—*
Bertin, Claude L.; Bula, John; Martin, Larry C.; and Williams, Thomas A., 4,198,696, Cl. 365-175.000.

Marvin Glass & Associates: *See—*
Imatt, Alex, 4,198,055, Cl. 273-243.000.

Marwitz, Hans-Gunther v. d.: *See—*
Muth, Hans-Albrecht; Stark, Rudolf; Marwitz, Hans-Gunther v. d.; Hundemer, Peter; Estel, Heinz; and Reissig, Dirk, 4,198,093, Cl. 296-78.100.

Masegi, Koichi; and Kitamura, Takashi, to Canon Kabushiki Kaisha. Image recording apparatus capable of representing half-tones on an image. 4,198,154, Cl. 355-5.000.

Massa, Frank, to Stoneleigh Trust, Donald P. Massa and Fred M. Dellorfano, Trustees, The. Directional energy receiving systems for use in the automatic indication of the direction of arrival of the received signal. 4,198,705, Cl. 367-126.000.

Massey-Ferguson Services N.V.: *See—*
Volpi, Claudio, 4,197,761, Cl. 74-481.000.

Masuda, Hajime: *See—*
Oguchi, Takuro; and Masuda, Hajime, 4,198,600, Cl. 455-15.000.

Masuoka, Yutaka: *See—*
Imanishi, Masayuki; Masuoka, Yutaka; and Nakajima, Ryoko, 4,198,514, Cl. 346-216.000.

Materials Research Corporation: *See—*
Class, Walter H.; Unterkofler, George J.; and Hurwitt, Steven D., 4,198,283, Cl. 204-298.000.

Mathbirk Limited: *See—*
Matthews, Denis, 4,197,802, Cl. 112-27.000.

Mather & Platt Limited: *See—*
Williamson, Terence J., 4,197,975, Cl. 228-48.000.

Mathisen, William D., to Pelco Sales. Video sequencer-processor. 4,198,656, Cl. 358-127.000.

Matsuda, Atsushi; Kishigami, Jun; and Nishimura, Masaaki, to Sony Corporation. Peripherally reinforced laminated loudspeaker diaphragm. 4,198,550, Cl. 179-181.00F.

Matsuda, Shoei: *See—*
Yamada, Takuro; Katsumi, Yasuo; and Matsuda, Shoei, 4,197,679, Cl. 51-281.00C.

Matsuda, Takashi, to Tokyo Shibaura Electric Co., Ltd. Mask for soft X-rays and method of manufacture. 4,198,263, Cl. 156-639.000.

Matsugo, Ryuzo; and Matsugo, Ryuzo, to Sumiyoshi Denki Kabushiki-Kaisha; and Sumiyoshi Denki Kabushiki-Kaisha. System for replenishing developer. 4,198,151, Cl. 354-298.000.

Matsugo, Ryuzo: *See—*
Matsugo, Ryuzo; and Matsugo, Ryuzo, 4,198,151, Cl. 354-298.000.

Matsui, Hironori, to Kanebo Ltd. Novel carbon-carbon composite material and method for its production. 4,198,382, Cl. 423-445.000.

Matsui, Kazumi; Takasue, Takashi; and Iwasaki, Masami, to Furukawa Electric Co., Ltd., The. Belt conveyor transportation system utilizing magnetic attraction. 4,197,934, Cl. 198-472.000.

Matsumoto, Hisashi; and Niimi, Hiroji, to Mitsui Petrochemical Industries Ltd. Grafted polyolefin composition having improved adhesiveness. 4,198,327, Cl. 260-4.000.

Matsumura, Isao; and Kohayakawa, Yoshimi, to Canon Kabushiki Kaisha. Eye fundus camera. 4,198,144, Cl. 354-62.000.

Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; and Yagi, Masahiro, to Nippon Shinyaku Co., Ltd. Process for the preparation of 2-hydroxymethyl-3,4,5-trihydroxy piperidine. 4,198,481, Cl. 435-122.000.

Matsuyama, Chiaki: *See—*
Suzuki, Toshimasa; Matsuyama, Chiaki; Ogawa, Susumu; Itoh, Yoshitaka; and Usui, Yasuo, 4,197,623, Cl. 29-33.00D.

Matthews, Denis, to Mathbirk Limited. Linking machines. 4,197,802, Cl. 112-27.000.

Matthias, Dan W.; and Thornton, Richard D., to Exxon Research & Engineering Co. High performance stepper motor. 4,198,582, Cl. 310-12.000.

Mauer, Dieter, to USM Corporation. Trim strips. 4,197,688, Cl. 52-718.000.

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Haverdink, Virgil D.; Maust, John E., Jr.; and Livesay, Fred C., Jr., 4,197,916, Cl. 171-58.000.

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Kachel, Volker; and Glossner, Ewald, 4,198,160, Cl. 356-72.000.

Mayama, Shinji; Koga, Masataka; Arai, Yoji; and Oishi, Konosuke, to Hitachi, Ltd. Spectral source, particularly for atomic absorption spectrometry. 4,198,589, Cl. 315-267.000.

Mayer, Edward A., to Texaco Inc. Secondary fuel recovery system. 4,197,883, Cl. 141-59.000.

Mazzur, Richard P.: *See—*
Adams, Kim M.; Dees, Martin, Jr.; and Mazzur, Richard P., 4,198,456, Cl. 428-159.000.

McAulay, Hubert J.; and Francis, Orville B., to Unit Rig & Equipment Co. Means for driving the back walls of a bucket excavator. 4,197,662, Cl. 37-189.000.

McClain, Robert W., to Glitsch, Inc. Reactor distribution duct. 4,198,002, Cl. 239-568.000.

McClure, John C.: *See—*
Parr, Richard A.; Johnston, Mary H.; and McClure, John C., 4,198,232, Cl. 75-135.000.

McConnell, Charles H.: *See—*
Dunstan, Phillip E.; and McConnell, Charles H., 4,197,933, Cl. 198-334.000.

McCord Corporation: *See—*
Campbell, Robert J.; and Gray, Paul D., 4,197,995, Cl. 239-74.000.

McDaniel, Milton W.: *See—*
Elliott, Guy R. B.; and McDaniel, Milton W., 4,198,289, Cl. 209-11.000.

McDaniel, Richard W.: *See—*
Helfenstine, Ronald A.; and McDaniel, Richard W., 4,197,667, Cl. 43-42.060.

McDonnell Douglas Corporation: *See—*
Comley, William, 4,198,608, Cl. 328-162.000.
Schultz, Matti I., 4,198,180, Cl. 408-9.000.

McElroy, David J., to Texas Instruments Incorporated. Static semiconductor memory cell using data lines for voltage supply. 4,198,695, Cl. 365-154.000.

McGee, Arthur L.; Browning, Robert A.; and Yock, Lewis M., to Coe Manufacturing Company, The. Log centering apparatus and method using transmitted light and reference edge log scanner. 4,197,888, Cl. 144-209.00A.

McGowan, Lloyd E. Flexible piping method and apparatus of producing same. 4,197,728, Cl. 72-49.000.

McHugh, Philip; Brown, William R.; and Brown, Peter W., to Atomic Energy of Canada Limited. Unitary self shielded, self filtered and flattened Bremsstrahlung photon source assembly for radiotherapy use. 4,198,570, Cl. 250-503.000.

McIntosh, Meldon J.: *See—*
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McKay, Dwight L.: *See—*
Bertus, Brent J.; McKay, Dwight L.; and Mark, Harold W., 4,198,317, Cl. 252-411.00R.

McKinsey, Joseph G. Holder for fishing rod. 4,197,668, Cl. 43-15.000.

McNabney, John C., to Wehr Corporation. Fluid flow measuring apparatus. 4,197,740, Cl. 73-212.000.

Mead Corporation, The: *See—*
Cha, Charles L.; Denlinger, George W.; Pipkorn, David N.; and Spyrou, Elias, 4,198,643, Cl. 346-75.000.
Gamblin, Rodger L., 4,198,642, Cl. 346-75.000.

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Medicor Muvek: *See—*
Kasa, Zoltan, 4,197,854, Cl. 128-630.000.

Mehada, Masashi; Kawai, Masahiko; Sasaki, Mitsuo; and Kimura, Tohru, to Toyo Aluminum Kabushiki Kaisha. Method for producing anode aluminum foils for electrolytic condensers. 4,198,278, Cl. 204-129.750.

Mehl, Donald N.: *See—*
Kaster, Robert L.; Mehl, Donald N.; and Klemetsrud, Kathryn A., 4,197,593, Cl. 3-1.500.

Meiji Seika Kaisha, Ltd.: *See—*
Koeda, Takemi; Tsuruoka, Takashi; Shibata, Uichi; Asaoka, Hiroyasu; Hachisu, Mitsugu; Itoh, Osamu; Sekizawa, Yasuharu; Inouye, Shigeharu; and Niida, Taro, 4,198,416, Cl. 424-266.000.

Meislik, Ira P., to Tri-Chem de Puerto Rico, Inc. Angled ball tip for viscous fluids. 4,198,172, Cl. 401-214.000.

Melpolder, Frank W.: *See—*
Wentzheimer, W. Wayne; and Melpolder, Frank W., 4,198,530, Cl. 568-697.000.

Melzer, Arnfried: *See—*
Vetter, Hans; Puschel, Walter; Melzer, Arnfried; and Peters, Manfred, 4,198,235, Cl. 430-222.000.

Mendoza, Fausto C. Apparatus for molding and precooking corn and wheat tortillas. 4,197,792, Cl. 99-349.000.
Merck & Co., Inc.: *See*—
Baldwin, John J.; and Novello, Frederick C., 4,198,513, Cl. 546-167.000.
Saari, Walfred S., 4,198,413, Cl. 424-256.000.
Treiber, Laszlo R.; and Gullo, Vincent P., 4,198,338, Cl. 260-326.310.
Tytell, Alfred A.; Scattergood, Edgar; and Field, Arthur K., 4,198,479, Cl. 435-2.000.
Mercurio, Leonard. Coin chute having single multiple coin staggered aperture. 4,197,932, Cl. 194-92.000.
Meredith, James F.; and Williams, Brian, to Smiths Industries Limited. Control systems. 4,198,021, Cl. 244-194.000.
Merger, Franz; Strohmeyer, Max; Sandrock, Gerhard; Hohenschutz, Heinz; Schroff, Ludwig; and Nestler, Gerhard, to BASF Aktiengesellschaft. Manufacture of p-alkylphenols. 4,198,531, Cl. 568-793.000.
Merkel, Stephen F., to Fluid Controls, Inc. Fluid control valve. 4,197,871, Cl. 137-102.000.
Merlo, Fabrizio; and Bornengo, Giorgio, to Montedison S.p.A. Isatin-derived dispersed dyes. 4,198,516, Cl. 548-327.000.
Meyer, Eckhard; and Berndes, Gunter, to BBC Brown Boveri & Company, Limited. Method of manufacturing semiconductor components. 4,197,631, Cl. 29-574.000.
Meyer, Guenter: *See*—
Elser, Wolfgang; Eilingsfeld, Heinz; and Meyer, Guenter, 4,198,205, Cl. 8-39.00R.
Mezei, George A., to FMC Corporation. Pipe coupler with positive disconnect device. 4,198,076, Cl. 285-18.000.
Mezrich, Reuben S.; and Vilkomerson, David H. R., to RCA Corporation. Ultrasonic wave energy electronic B-scan imaging apparatus. 4,197,749, Cl. 73-625.000.
Mezrich, Reuben S.: *See*—
Vilkomerson, David H. R.; and Mezrich, Reuben S., 4,197,751, Cl. 73-633.000.
Micciche, Giovanni, to Colgate Palmolive Company. Manufacture of free-flowing fabric softening detergent. 4,198,308, Cl. 252-135.000.
Michel, Jacques: *See*—
Trombe, Felix; and Michel, Jacques, 4,197,993, Cl. 126-429.000.
Mikami, Takeshi: *See*—
Yoneyama, Masakazu; Yamaguchi, Jiro; and Mikami, Takeshi, 4,198,478, Cl. 430-449.000.
Mikawa, Akikazu, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsion. 4,198,240, Cl. 430-570.000.
Milkovic, Miran, to General Electric Company. Apparatus and method of phase shift compensation of an active terminated current transformer. 4,198,595, Cl. 323-6.000.
Miller, G. W. Suspended exercising device. 4,198,045, Cl. 272-142.000.
Miller, Jack V. Torque limited male screw base for lampholder fitting. 4,198,112, Cl. 339-176.00L.
Miller, Michael E.: *See*—
Deal, Douglas O.; and Miller, Michael E., 4,198,167, Cl. 366-152.000.
Miller, Robert M.: *See*—
Olcott, Tyler K.; and Miller, Robert M., 4,198,452, Cl. 428-68.000.
Miller, Samuel L., to Lukens Steel Company. Controlled cooled mold car and method for the electroslag remelting process. 4,197,898, Cl. 164-4.000.
Mills, Edwin R.; and Elmore, Ernest L., to Fieldcrest Mills, Inc. Electrically heated bedcover with overheat protective circuit. 4,198,562, Cl. 219-505.000.
Milton, Harold W., Jr.; Hochstein, Peter A.; and Pringle, William L. Thermal energy scavenger (alternating stress limiters). 4,197,708, Cl. 60-527.000.
Mineck, Fred, to Archer, Dorothy J.; and Mineck, Jay A., part interest to each. Carburetor with self adjusting double venturi. 4,198,358, Cl. 261-50.00A.
Mineck, Jay A.: *See*—
Mineck, Fred, 4,198,358, Cl. 261-50.00A.
Miner Enterprises, Inc.: *See*—
Anderson, David G., 4,198,037, Cl. 267-153.000.
Minnesota Mining and Manufacturing Company: *See*—
Bird, Forrest M., 4,197,843, Cl. 128-200.140.
Minogue, Michael I.; Bennett, John R.; and Whitehead, John C., to Coal Industry (Patents) Limited. Fluid operable valves. 4,197,873, Cl. 137-219.000.
Minolta Camera Kabushiki Kaisha: *See*—
Abe, Haruo; and Yasukuni, Mitsuo, 4,198,126, Cl. 350-184.000.
Ogino, Shuji, 4,198,128, Cl. 350-184.000.
Tominaga, Shinji; and Ueda, Hiroshi, 4,198,141, Cl. 354-46.000.
Mir, Ghulam N.: *See*—
Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; Patel, Dahyabhai M.; Won, Chong M.; and Alioto, Ronald L., 4,198,409, Cl. 424-249.000.
Mischenko, Nicholas: *See*—
Parker, Robert R.; and Mischenko, Nicholas, 4,198,138, Cl. 353-71.000.
Misek, Victor A.; Hastbacka, Albin A.; Beairsto, Robert J.; and Trasatti, Alphonse J., to Sanders Associates, Inc. Touch entry interactive cathode ray tube arrangement. 4,198,623, Cl. 340-365.00P.
Mistui, Seiji; Ogiso, Akira; and Indo, Akira, to Sankyo Company Limited. Mevalonolactone derivatives. 4,198,425, Cl. 424-279.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Ikemi, Shinichi; and Shimoda, Michio, 4,197,727, Cl. 72-12.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Suzuki, Toshimasa; Matsuyama, Chiaki; Ogawa, Susumu; Itoh, Yoshitaka; and Usui, Yasuo, 4,197,623, Cl. 29-33.00D.
Mitsui Petrochemical Industries Ltd.: *See*—
Matsumoto, Hisashi; and Niimi, Hiroji, 4,198,327, Cl. 260-4.000.
Takahata, Kazunori; and Hasui, Hiroshi, 4,198,535, Cl. 585-406.000.
Yoshikawa, Tetsuo; Hayata, Shinzi; and Hirota, Yutaka, 4,198,369, Cl. 264-268.000.
Mitsuishi, Yukio; Shiozaki, Shigeru; and Murakami, Hitoshi, to Teijin Limited. Laminate polyester films. 4,198,458, Cl. 428-212.000.
Miura, Yasuyuki, to Ozen Co., Ltd. Simplified record player. 4,198,057, Cl. 274-1.00A.
Miyamoto, Norioki: *See*—
Inoue, Shigeo; Miyamoto, Norioki; and Shimizu, Haruo, 4,198,304, Cl. 252-47.500.
Miyazaki, Kenichi: *See*—
Miyoshi, Tadayoshi; Nakagaki, Shintaro; Takanashi, Itsuo; Motoyama, Koichiro; Yokokawa, Sumio; and Miyazaki, Kenichi, 4,198,592, Cl. 315-382.000.
Miyoshi, Tadayoshi; Nakagaki, Shintaro; Takanashi, Itsuo; Motoyama, Koichiro; Yokokawa, Sumio; and Miyazaki, Kenichi, to Victor Company of Japan, Limited. Circuit for stabilizing electron beam focusing of an electromagnetic focusing type camera tube. 4,198,592, Cl. 315-382.000.
Mizobuchi, Yuzo: *See*—
Nahara, Akira; Ono, Yoshihiro; Namiki, Tomizo; Harada, Shigeo; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,198,237, Cl. 430-415.000.
Mizoguchi, Takeru: *See*—
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Mizuno, Takehisa: *See*—
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Mobil Oil Corporation: *See*—
Braid, Milton, 4,198,303, Cl. 252-42.700.
Chester, Arthur W.; and Stover, William A., 4,198,320, Cl. 252-455.00Z.
Ladov, Edwin N.; Law, Derek A.; and Kuehl, Guenter H., 4,198,207, Cl. 23-230.0HC.
Okorodudu, Abraham O. M., 4,198,305, Cl. 252-48.600.
Schmitt, Kirk D., 4,198,355, Cl. 260-983.000.
Modern Office Equipment Pty. Ltd.: *See*—
Gibbs, Bronwen, 4,198,105, Cl. 312-183.000.
Moen, Lenard E. Tray in tray container forming. 4,197,789, Cl. 93-51.00M.
Molari, Richard E., to General Electric Company. Impact resistant laminate. 4,198,468, Cl. 428-412.000.
Molins, Desmond W., to Molins Ltd. Conveying rod-like articles. 4,197,864, Cl. 131-94.000.
Molins Ltd.: *See*—
Molins, Desmond W., 4,197,864, Cl. 131-94.000.
Moller, Jens L.; and Kubis, Charles S., to Continental Group, Inc., The. System for production of metal tear tabs. 4,197,732, Cl. 72-335.000.
Molls, Hans-Heinz: *See*—
Kaspar, Vaclav; Molls, Hans-Heinz; Hornle, Reinhold; and Hummes, Ferdinand, 4,198,264, Cl. 159-4.00B.
Molof, Alan H.: *See*—
Doumas, John J.; Molof, Alan H.; Raymond, Gordon H.; and Wikstrom, Lee, 4,198,296, Cl. 210-29.000.
Moncrieff-Yeates, Alexander J. Method and apparatus for generating a stable vortex fluid flow pattern. 4,197,869, Cl. 137-13.000.
Montedison S.p.A.: *See*—
Bargigia, Gianangelo; Caporiccio, Gerardo; and Carniselli, Giuliano, 4,198,313, Cl. 252-305.000.
Bertelli, Guido; Roma, Pierpaolo; and Locatelli, Renato, 4,198,328, Cl. 260-22.00A.
Marciandi, Franco, 4,198,493, Cl. 525-164.000.
Merlo, Fabrizio; and Bornengo, Giorgio, 4,198,516, Cl. 548-327.000.
Montron Corporation: *See*—
Ciupke, Werner W.; Runyan, Steven R.; and Sherlock, Hugh P., 4,198,134, Cl. 352-129.000.
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joaquin; Kiwala, Jacob; and Schreiber, William L., to International Flavors & Fragrances Inc. Use of trans, trans-Δ-damascone and mixtures containing 80% or trans, trans-Δ-damascone in augmenting or enhancing the aroma of a detergent. 4,198,309, Cl. 252-174.110.
Moore, George S., to Harris Corporation of Cleveland, Ohio. Linearization technique for closed-loop acousto-optic modulators. 4,198,675, Cl. 364-525.000.
Moore, James E.; Orkin, Ona V.; and Schroeter, Siegfried H., to General Electric Company. Photocurable acrylic coated polycarbonate articles. 4,198,465, Cl. 428-409.000.
Moore, Nathaniel N., to Cessna Aircraft Company. Gyroscopic method and apparatus for determining magnetic heading and attitude. 4,197,655, Cl. 33-318.000.
Morgan Trailer Mfg. Co.: *See*—
Mountz, Elton E., 4,198,187, Cl. 414-537.000.
Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; Horikoshi, Ichiro; and Takahashi, Souya, to Kabushiki Kaisha Daini Seikosha. Alarm watch. 4,197,697, Cl. 368-315.000.
Morimoto, Kiyoshi: *See*—
Takagi, Toshinori; and Morimoto, Kiyoshi, 4,197,814, Cl. 118-726.000.

Morin, Boris P.: *See*—
Lishevskaya, Marina O.; Morin, Boris P.; Stanchenko, Galina I.; Vanjushkina, Tatyana A.; and Rogovin, Zakhar A., 4,198,326, Cl. 260-17.4GC.

Moros, David: *See*—
Corwin, Daniel W.; Koplow, Harold S.; Moros, David; and Anagnostopoulos, Paul, 4,198,685, Cl. 364-900.000.

Morrison, Paul M. Housing for dental amalgamator. 4,197,646, Cl. 433-97.000.

Morrow, Ray E., Jr. Marine detection apparatus. 4,197,741, Cl. 73-344.000.

Mortensen, Harold R., to Facet Enterprises, Inc. Direct cranking starter device. 4,197,885, Cl. 192-42.000.

Morton Buildings, Inc.: *See*—
Knepp, Wayne A.; and Fehr, David A., 4,198,175, Cl. 403-191.000.

Morton, Douglas R., Jr., to Upjohn Company, The. 11-Deoxy-3,7-inter-m-phenylene-4,5,6-trinor-3-oxa-PGE compounds. 4,198,525, Cl. 562-471.000.

Morton, Kenneth O.: *See*—
Hughes, Francis H.; Morton, Kenneth O.; LeMere, Roger; and Brown, Fred A., III, 4,198,041, Cl. 271-9.000.

Morton, Randolph J.; Suchy, Lee R.; and Wahlquist, Glenn F., to Speedfast Corporation. Nailer. 4,197,974, Cl. 227-8.000.

Morton, Roger R. A., to Bausch & Lomb Incorporated. Image analysis nonlinear adaptive filter for improving signal-to-noise ratio. 4,198,612, Cl. 333-17.00R.

Moser, Helmut: *See*—
Frei, Alfred; Moser, Helmut; Schoefberger, Georg; and Schweizer, August, 4,198,268, Cl. 162-162.000.

Moss, Charles A.; Shaneyfelt, Leon J., Jr.; and Hunter, Charley W., to Vendo Company, The. Apparatus for reading and writing data onto a magnetic stripe and in an arcuate path. 4,197,988, Cl. 235-449.000.

Motch & Merryweather Machinery Company, The: *See*—
Smith, Edward E.; and Stelmashuk, Philip J., 4,197,769, Cl. 82-3.000.

Motoren-und Turbinen-Union Munchen GmbH: *See*—
Hildebrandt, Florian; and Popp, Joachim, 4,197,870, Cl. 137-43.000.

Motoyama, Koichiro: *See*—
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Mountz, Elton E., to Morgan Trailer Mfg. Co. Ramp and ramp carrier for trucks and the like. 4,198,187, Cl. 414-537.000.

Mowat, Douglas, to Ciba-Geigy Corporation. Process for the production of bis-azomethine pigments. 4,198,345, Cl. 260-439.00R.

Muller, Friedhelm: *See*—
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Mundus, Friedhelm; and Simon, Helmut, to Windmoller & Holscher. Apparatus for severing a stack of filmlike sections and simultaneously forming them into blocks. 4,198,260, Cl. 156-515.000.

Munson, Harry R., Jr., to A. H. Robins Company, Inc. Compounds and methods for treating diabetic complications. 4,198,414, Cl. 424-258.000.

Munson, John C., to United States of America, Navy. Passive underwater target detection and locating system. 4,198,704, Cl. 367-125.000.

Munzer, Robert A.; and Weiner, Benjamin F., to Chase Instruments Corporation. Blood sedimentation rate test means. 4,197,735, Cl. 73-61.400.

Murakami, Fumikazu: *See*—
Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; Horikoshi, Ichiro; and Takahashi, Souya, 4,197,697, Cl. 368-315.000.

Murakami, Hitoshi: *See*—
Mitsuishi, Yukio; Shiozaki, Shigeru; and Murakami, Hitoshi, 4,198,458, Cl. 428-212.000.

Murakami Kaimeido Co., Ltd.: *See*—
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Muraoka, Teruo: *See*—
Ishigaki, Yukinobu; Muraoka, Teruo; Hagihara, Masaki; Nasu, Takeo; and Kato, Kunihiro, 4,198,609, Cl. 329-136.000.

Murase, Kiyoshi: *See*—
Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; Yamazaki, Atsuki; Tamazawa, Kazaharu; Murase, Kiyoshi; and Shibanuma, Tadao, 4,198,339, Cl. 549-89.000.

Murayama, Kashiwa, to Japan Crown Cork Co., Ltd. Easily openable container closure having a shell and a sealing member. 4,197,956, Cl. 215-254.000.

Murphy, Donald W.: *See*—
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Murphy, Lawrence J.: *See*—
France, James R.; Baiocchi, Fred; Murphy, Lawrence J.; and Van Haften, John L., 4,198,311, Cl. 252-117.000.

Murray, Billy W., to Beaird-Poulan Division, Emerson Electric Co. Safety braking apparatus for portable chain saw. 4,197,640, Cl. 30-382.000.

Murray, David W.: *See*—
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Murray, James B., to United States of America, Army. Control augmentation system for flight vehicles. 4,198,017, Cl. 244-83.00G.

Muschelknautz, Horst: *See*—
Freiberg, Bernd-Rainer; Gehl, Wilfried; Liebe, Jurgen; and Muschelknautz, Horst, 4,197,742, Cl. 73-362.0CP.

Muster, Frank L.: *See*—
Rayfield, Wilson P.; Preston, Norman H.; Ferguson, Ronald W.; Dear, Frederick H.; Korytkowski, Henry M.; Muster, Frank L.; and Karns, Ward L., 4,197,797, Cl. 101-90.000.

Muth, Hans-Albrecht; Stark, Rudolf; Marwitz, Hans-Gunther v. d.; Hundemer, Peter; Estel, Heinz; and Reissig, Dirk, to Bayerische Motoren Werke Aktiengesellschaft. Motorcycle covering. 4,198,093, Cl. 296-78.100.

Mylich, Wolfgang; and Albert, Walter, to Hoechst Aktiengesellschaft. Flameproof polystyrene foam and process for the manufacture thereof. 4,198,486, Cl. 521-79.000.

Mysicka, James C.: *See*—
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Naganawa, Hiroshi: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,198,480, Cl. 435-78.000.

Nagano, Noriaki: *See*—
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Nagano, Yoshinobu: *See*—
Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; Yamazaki, Atsuki; Tamazawa, Kazaharu; Murase, Kiyoshi; and Shibanuma, Tadao, 4,198,339, Cl. 549-89.000.

Nagashima, Takashi: *See*—
Tashiro, Yasuhisa; Nagashima, Takashi; Aoki, Shigeru; and Nishizawa, Rinzo, 4,198,524, Cl. 562-470.000.

Nagata, Masanori, to Omron Tateisi Electronics Co. Money transaction system. 4,197,986, Cl. 235-379.000.

Nahara, Akira; Ono, Yoshihiro; Namiki, Tomizo; Harada, Shigeo; Mizobuchi, Yuzo; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Image forming materials and image forming process. 4,198,237, Cl. 430-415.000.

Nahta, Roop C., to GAF Corporation. Foaming composition for textile finishing and coatings. 4,198,316, Cl. 252-354.000.

Naito, Takayuki; Okumura, Jun; and Oka, Masahisa, to Bristol-Myers Company. [3-(Pyridinium)-7-(naphthyiridinyl carbonylamino)acetamido]cephalosporanic acid derivatives. 4,198,504, Cl. 544-25.000.

Naito, Takayuki; Okumura, Jun; Kamachi, Hajime; Iimura, Seiji; Hoshi, Hideaki; and Oka, Masahisa, to Bristol-Myers Company. 2-Carboxyalkyl-2,3-dihydro-6-mercapto-s-triazolo[4,3-b]-pyridazin-3-ones. 4,198,506, Cl. 544-236.000.

Nakagaki, Shintaro: *See*—
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Nakajima, Ryoko: *See*—
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Nakamura, Marianne. Bi-modal pillow. 4,197,604, Cl. 5-437.000.

Nakamura, Yasushi: *See*—
Katayama, Hiroyuki; Inatomi, Makoto; Kajioka, Hiroyuki; Nakamura, Yasushi; Ito, Michihisa; Harashima, Kazuumi; and Ohno, Takamasa, 4,198,229, Cl. 75-53.000.

Nakanishi, Atsuo: *See*—
Izawa, Shinichi; Sugiyama, Jun; and Nakanishi, Atsuo, 4,198,492, Cl. 525-134.000.

Namiki, Tomizo: *See*—
Nahara, Akira; Ono, Yoshihiro; Namiki, Tomizo; Harada, Shigeo; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,198,237, Cl. 430-415.000.

Nani, James. Two-part band structure with interengageable ends. 4,197,720, Cl. 63-11.000.

Nasu, Takeo: *See*—
Ishigaki, Yukinobu; Muraoka, Teruo; Hagihara, Masaki; Nasu, Takeo; and Kato, Kunihiro, 4,198,609, Cl. 329-136.000.

Nather, Lothar: *See*—
Eistert, Theodor; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Schmidt, Gerhard; and Nather, Lothar, 4,197,690, Cl. 56-10.200.

National Research Development Corporation: *See*—
Binns, David B.; and Bloor, Ian K., 4,198,244, Cl. 106-35.000.
Sheppard, Colin J. R., 4,198,571, Cl. 250-571.000.

National Semiconductor Corporation: *See*—
Connolly, Joseph J., Jr.; Fredericksen, Thomas M.; and Redfern, Thomas P., 4,198,622, Cl. 340-347.0DA.
Culmer, Daniel D., 4,198,580, Cl. 307-251.000.

NCR Corporation: *See*—
Goetz, William J., 4,198,446, Cl. 427-150.000.

Neal, Jerry D. Soil moisture sampler and controller. 4,197,866, Cl. 137-1.000.

Neff, James A., to MAC Valves, Inc. Pressure regulator and flow control valve with pre-exhaust vent means. 4,197,874, Cl. 137-270.000.

Nelson, Alfred M.; and Davis, David L., to AM International, Inc. Toner applicator and removal apparatus. 4,197,811, Cl. 118-50.000.

Nelson, George F.; Cosimini, Gregory J.; Johnson, Leslie H.; Lo, David S.; Paul, Maynard C.; and Torok, Ernest J., to Sperry Corporation. Counter for cross-tie wall memory system. 4,198,686, Cl. 365-79.000.

Nelson, George R., to Weyerhaeuser Company. Controlled gloss pigment system for coating printing papers at paper machine calendering conditions. 4,198,471, Cl. 428-513.000.
Nerenberg, Robert W., to Interstate Folding Box Company, The. End closure for lined cartons. 4,197,963, Cl. 220-462.000.
Nestler, Gerhard: *See*—
Merger, Franz; Strohmeyer, Max; Sandrock, Gerhard; Hohenschutz, Heinz; Schroff, Ludwig; and Nestler, Gerhard, 4,198,531, Cl. 568-793.000.
Nettleton, Donald F.: *See*—
Anderson, Stanley L.; and Nettleton, Donald F., 4,197,772, Cl. 83-63.000.
Neves, John C.: *See*—
Gatten, Ronald A.; and Neves, John C., 4,198,661, Cl. 358-242.000.
Nevins, Robert L. Solar energy collector and associated methods adapted for use with overlapped roof shingles on the roof of a building. 4,197,834, Cl. 126-442.000.
Ng, Gim S., to United States of America, Army. Dual caliber revolver. 4,197,666, Cl. 42-59.000.
Nickel, Bernd: *See*—
Paulke, Monika; Hohmann, Eugen; and Nickel, Bernd, 4,197,641, Cl. 433-32.000.
Nieminen, Timo, to Den-Tal-Ez Mfg. Co. Motion mechanism of X-ray film in panoramic radiography. 4,198,566, Cl. 250-439.00P.
Nifco Incorporated: *See*—
Hara, Kunio, 4,198,617, Cl. 337-403.000.
Nightingale, Douglas D. J., to Imperial Chemical Industries Limited. Valve. 4,198,368, Cl. 264-263.000.
Niida, Taro: *See*—
Koeda, Takemi; Tsuruoka, Takashi; Shibata, Uichi; Asaoka, Hiroyasu; Hachisu, Mitsugu; Itoh, Osamu; Sekizawa, Yasuharu; Inouye, Shigeharu; and Niida, Taro, 4,198,416, Cl. 424-266.000.
Niimi, Hiroji: *See*—
Matsumoto, Hisashi; and Niimi, Hiroji, 4,198,327, Cl. 260-4.000.
Nippon Atsudenki Kabushiki Kaisha t/a Japan Piezo Co. Ltd.: *See*—
Ono, Atsushi; Fujino, Shoji; Ozaki, Yukio; and Suzuki, Kentaro, 4,198,601, Cl. 455-73.000.
Nippon Aviotronics Company, Limited: *See*—
Takayama, Hisao, 4,198,569, Cl. 250-492.00R.
Nippon Electric Co., Ltd.: *See*—
Aomura, Kunio, 4,197,632, Cl. 29-574.000.
Iijima, Hiroshi; and Sano, Yasushi, 4,198,659, Cl. 358-150.000.
Kobayashi, Kohroh, 4,198,117, Cl. 350-96.190.
Nippon Electric Glass Co., Ltd.: *See*—
Kuze, Takashi; Makio, Hajime; and Baba, Yukio, 4,198,588, Cl. 313-479.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Baba, Michiru, 4,198,606, Cl. 328-141.000.
Nippon Kayaku Kabushiki Kaisha: *See*—
Tashiro, Yasuhisa; Nagashima, Takashi; Aoki, Shigeru; and Nishizawa, Rinzo, 4,198,524, Cl. 562-470.000.
Nippon Piston Ring Co., Ltd.: *See*—
Asano, Kenji, 4,197,707, Cl. 60-517.000.
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,198,195, Cl. 418-133.000.
Sugahara, Eisuke, 4,197,930, Cl. 192-88.00B.
Nippon Shinyaku Co., Ltd.: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; and Yagi, Masahiro, 4,198,481, Cl. 435-122.000.
Nippon Steel Corporation: *See*—
Katayama, Hiroyuki; Inatomi, Makoto; Kajioka, Hiroyuki; Nakamura, Yasushi; Ito, Michihisa; Harashima, Kazuumi; and Ohno, Takamasa, 4,198,229, Cl. 75-53.000.
Nisenson, Peter: *See*—
Tatian, Berge; Hudgin, Richard H.; and Nisenson, Peter, 4,198,125, Cl. 350-162.0SF.
Nishijima, Hideo; Fukushima, Isao; and Kimura, Hiroyuki, to Hitachi, Ltd. Limiter circuit for limiting pulsive noises. 4,198,602, Cl. 455-307.000.
Nishimura, Masaaki: *See*—
Matsuda, Atsushi; Kishigami, Jun; and Nishimura, Masaaki, 4,198,550, Cl. 179-181.00F.
Nishizawa, Jun-ichi, to Semiconductor Research Foundation. Semiconductor controlled rectifier having gate grid dividing surrounding zone into two different impurity concentration sections. 4,198,645, Cl. 357-22.000.
Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Integrated semiconductor device. 4,198,648, Cl. 357-43.000.
Nishizawa, Rinzo: *See*—
Tashiro, Yasuhisa; Nagashima, Takashi; Aoki, Shigeru; and Nishizawa, Rinzo, 4,198,524, Cl. 562-470.000.
Nissan Motor Company, Limited: *See*—
Kamijo, Ken; and Fukunaga, Yukio, 4,198,011, Cl. 242-107.700.
Ohnishi, Kimimasa, 4,197,882, Cl. 139-435.000.
Noack, Christian: *See*—
Eistert, Theodor; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Schmidt, Gerhard; and Nather, Lothar, 4,197,690, Cl. 56-10.200.
Noel, Gerard, to Noel, Marquet & Cie, S.A. Continuous extrusion of thermoplastic materials. 4,198,363, Cl. 264-45.900.
Noel, Marquet & Cie, S.A.: *See*—
Noel, Gerard, 4,198,363, Cl. 264-45.900.
Nogami, Tomoyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic brake pressure control device for vehicles. 4,198,100, Cl. 303-6.00C.
Noggle, Ralph C.: *See*—
Krider, Edmund P.; and Noggle, Ralph C., 4,198,599, Cl. 324-72.000.
Noguchi, Eiji: *See*—
Aoyama, Keizoh; Shimada, Hiroshi; and Noguchi, Eiji, 4,198,700, Cl. 365-230.000.
Nomura, Katsuhiko; and Haraguchi, Keisuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Locking shutter speed dial device for a camera. 4,198,149, Cl. 354-268.000.
Norcia, John A. Clutch friction plate and damper spring construction. 4,197,931, Cl. 192-106.200.
Norris, David D.; and Giffin, Charles E., to California Institute of Technology. Fiber optic device for correcting image tilt or curvature in a spectrogram. 4,198,120, Cl. 350-96.250.
Norsk Hydro A.S: *See*—
Andreassen, Knut A.; Johnsen, Henry K.; Solheim, Peder R.; and Kleveland, Sigbjorn, 4,198,282, Cl. 204-243.00R.
North American Philips Corp.: *See*—
Ustin, George, 4,198,109, Cl. 339-50.00R.
Northern Telecom Limited: *See*—
Serinken, Nur M.; and Baraff, David R., 4,198,630, Cl. 340-784.000.
Northrop, Robert B. Ultrasonic respiration/convulsion monitoring apparatus and method for its use. 4,197,856, Cl. 128-660.000.
Norton, Phil, to American Air Filter Company, Inc. Lightweight composite panel. 4,198,454, Cl. 428-117.000.
Novello, Frederick C.: *See*—
Baldwin, John J.; and Novello, Frederick C., 4,198,513, Cl. 546-167.000.
Nozawa, Takamitsu: *See*—
Saito, Tadao; Nozawa, Takamitsu; and Yamanaka, Nobuo, 4,198,457, Cl. 428-161.000.
Nu-Core, Inc.: *See*—
Cappel, Glenn A., 4,198,111, Cl. 339-112.00L.
Nuss, George W., Jr.; Santora, Norman J.; and Douglas, George H., to William H. Rorer, Inc. Benzylideneaniline derivatives. 4,198,349, Cl. 260-566.00F.
Nussbaum, Otto J., to Halstead Industries, Inc. Refrigeration system with auxiliary heat exchanger for supplying heat during defrost cycle and for subcooling the refrigerant during a refrigeration cycle. 4,197,716, Cl. 62-196.00B.
N.V. Raychem S.A.: *See*—
Cordia, Johannes M., 4,197,880, Cl. 138-99.000.
Nyberg, David D.: *See*—
Lyons, Bernard J.; Cammack, Travers K., II; and Nyberg, David D., 4,198,310, Cl. 252-63.200.
Oberthur, Heinrich, to ITT Industries, Incorporated. Braking pressure control unit for vehicular hydraulic brake systems. 4,198,099, Cl. 303-6.00C.
Oberthur, Heinrich, to ITT Industries, Incorporated. Load responsive brake force regulator. 4,198,101, Cl. 303-22.00R.
O'Brian, Edward D.; and Plachy, William M. Folding three-cornered vehicle. 4,198,069, Cl. 280-42.000.
Ochsner, Paul A., to Givaudan Corporation. Novel alcohol odorants. 4,198,532, Cl. 568-840.000.
O'Coin, Bernard J. Reuseable puncture shield for tire casings. 4,197,893, Cl. 152-310.000.
Oeckl, Siegfried; Genth, Hermann; Paulus, Wilfried; Rother, Heinz-Joachim; Stendel, Wilhelm; Brandes, Wilhelm; and Kraus, Peter, to Bayer Aktiengesellschaft. Aryl-thiocarboxylic acid thiocyanomethyl esters. 4,198,428, Cl. 424-302.000.
Oelberg, George R. Trailer with a dumping bottom. 4,198,096, Cl. 298-1.00B.
Offshore Company, The: *See*—
Pease, Floyd T.; Ray, Donald R.; Steddum, Riddle E.; and Crager, Bruce L., 4,198,179, Cl. 405-195.000.
Ogawa, Susumu: *See*—
Suzuki, Toshimasa; Matsuyama, Chiaki; Ogawa, Susumu; Itoh, Yoshitaka; and Usui, Yasuo, 4,197,623, Cl. 29-33.00D.
Ogawa, Toshio; Ebara, Katsuya; and Takahashi, Sankichi, to Hitachi, Ltd.; and Hitachi Plant Engineering and Construction Co., Ltd. Tubular membrane separation process and apparatus therefor. 4,198,293, Cl. 210-23.00H.
Ogino, Shuji, to Minolta Camera Kabushiki Kaisha. Wide angle zoom lens system. 4,198,128, Cl. 350-184.000.
Ogiso, Akira: *See*—
Mistui, Seiji; Ogiso, Akira; and Indo, Akira, 4,198,425, Cl. 424-279.000.
Oguchi, Takuro; and Masuda, Hajime, to Fujitsu Limited. Demodulating system for auxiliary channel in straight-through radio frequency repeater. 4,198,600, Cl. 455-15.000.
O'Hara, Mark J.: *See*—
Hilfman, Lee; O'Hara, Mark J.; and Johnson, Russell W., 4,198,286, Cl. 208-111.000.
Ohmori, Masayuki, to Sony Corporation. Vertical deflecting circuit. 4,198,591, Cl. 315-371.000.
Ohnishi, Kimimasa, to Nissan Motor Company, Limited. Fluid jet shuttleless loom with resistance providing means for weft yarn. 4,197,882, Cl. 139-435.000.
Ohno, Takamasa: *See*—
Katayama, Hiroyuki; Inatomi, Makoto; Kajioka, Hiroyuki; Nakamura, Yasushi; Ito, Michihisa; Harashima, Kazuumi; and Ohno, Takamasa, 4,198,229, Cl. 75-53.000.
Oishi, Kengo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Magnetic tape magazine. 4,198,014, Cl. 242-199.000.

Oishi, Konosuke: *See—*
Mayama, Shinji; Koga, Masataka; Arai, Yoji; and Oishi, Konosuke, 4,198,589, Cl. 315-267.000.
Oka, Masahisa: *See—*
Naito, Takayuki; Okumura, Jun; and Oka, Masahisa, 4,198,504, Cl. 544-25.000.
Naito, Takayuki; Okumura, Jun; Kamachi, Hajime; Iimura, Seiji; Hoshi, Hideaki; and Oka, Masahisa, 4,198,506, Cl. 544-236.000.
Oki Electric Industry Co., Ltd.: *See—*
Sasaki, Masao, 4,197,969, Cl. 226-79.000.
Oki, Toshikazu: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,198,480, Cl. 435-78.000.
Okorodudu, Abraham O. M., to Mobil Oil Corporation. Lubricant compositions. 4,198,305, Cl. 252-48.600.
Okumura, Jun: *See—*
Naito, Takayuki; Okumura, Jun; and Oka, Masahisa, 4,198,504, Cl. 544-25.000.
Naito, Takayuki; Okumura, Jun; Kamachi, Hajime; Iimura, Seiji; Hoshi, Hideaki; and Oka, Masahisa, 4,198,506, Cl. 544-236.000.
Okuno, Youichi: *See—*
Taguchi, Tetsuya; Tamura, Shuichi; and Okuno, Youichi, 4,198,146, Cl. 354-106.000.
Olcott, Tyler K.; and Miller, Robert M., to W. R. Grace & Co. Molded plastic article having a thermally shockable insert therein. 4,198,452, Cl. 428-68.000.
Oldford, William G., to Huron Tool & Manufacturing, Division of U. S. Industries, Inc. Two-piece fitting assembly. 4,198,077, Cl. 285-21.000.
Olevsky, Viktor M.: *See—*
Shafranovsky, Alexandr V.; Olevsky, Viktor M.; Chubukov, Vladimir K.; and Baskov, Jury A., 4,198,360, Cl. 261-90.000.
Shafranovsky, Alexandr V.; Ruchinsky, Vitaly R.; Olevsky, Viktor M.; Gavrilin, Vladimir P.; Chubukov, Vladimir K.; Gromoglasova, Valentina N.; Bushev, Vladimir S.; Baskov, Jury A.; Kurkovskaya, Violetta V.; Gurkov, Boris A.; and Evkin, Ivan F., 4,198,361, Cl. 261-89.000.
Olin Corporation: *See—*
Knollmueller, Karl O., 4,198,346, Cl. 556-463.000.
Korenowski, Theodore F., 4,197,913, Cl. 169-45.000.
Mandigo, Frank N.; and Breedis, John F., 4,198,248, Cl. 148-2.000.
Olsen, Gary E. Trailer hitch. 4,198,073, Cl. 280-406.00A.
Olson, George E. Paddle tennis court and deck construction. 4,198,042, Cl. 272-3.000.
Olson, Harold G., to Amesbury Industries, Inc. Weather seal and method of making same. 4,198,453, Cl. 428-85.000.
Olson, James E.: *See—*
Hanson, Sheldon H.; Thompson, Craig B.; and Olson, James E., 4,197,793, Cl. 99-352.000.
Oltman, Eugene W.; and Hills, Robert N., to Ethyl Development Corporation. Container. 4,197,954, Cl. 215-1.00C.
Olympus Optical Co., Ltd.: *See—*
Oxanai, Akira, 4,197,636, Cl. 29-882.000.
Shinohara, Toshio; and Fujimori, Ryo, 4,198,284, Cl. 204-299.00R.
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; and Tawara, Ikuo, 4,198,483, Cl. 435-286.000.
Omron Tateisi Electronics Co.: *See—*
Nagata, Masanori, 4,197,986, Cl. 235-379.000.
Ondetti, Miguel A.; and Condon, Michael E., to E. R. Squibb & Sons, Inc. Mercaptoacyl derivatives of 4,5-dihydro-1H-pyrrole-2-carboxylic acids and 1,4,5,6-tetrahydropyridine-2-carboxylic acids. 4,198,515, Cl. 546-326.000.
Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Histidine derivatives. 4,198,517, Cl. 548-344.000.
O'Neal, Larry. Inflatable protective cushion. 4,198,036, Cl. 267-140.000.
O'Neill, Thomas F., Jr.: *See—*
Jernigan, James L.; and O'Neill, Thomas F., Jr., 4,198,634, Cl. 343-100.0CL.
Ong, Helen H.; and Profitt, James A., to American Hoechst Corporation. Phenoxyphenylpiperidines. 4,198,417, Cl. 424-267.000.
Ong, Helen H.; and Profitt, James A., to American Hoechst Corporation. Spiro[dibenz(b,f)oxepin-piperidine]s. 4,198,418, Cl. 424-267.000.
Ong, Helen H.; and Profitt, James A., to American Hoechst Corporation. Phenylthiophenylpiperidines. 4,198,419, Cl. 424-267.000.
Ong, Helen H.; and Profitt, James A., to American Hoechst Corporation. Spiro[dibenz(b,f)thiepin-piperidine]s. 4,198,420, Cl. 424-267.000.
Ong, Warren R.; and Ho, Walford, to Fairchild Camera and Instrument Corporation. Chip select power-down control circuitry. 4,198,698, Cl. 365-226.000.
Ono, Atsushi; Fujino, Shoji; Ozaki, Yukio; and Suzuki, Kentaro, to Nippon Atsudenki Kabushiki Kaisha t/a Japan Piezo Co. Ltd. Control unit for transceiver. 4,198,601, Cl. 455-73.000.
Ono, Katsuhiro, to Tokyo Shibaura Electric Co., Ltd. Charged particle beam scanning apparatus. 4,198,565, Cl. 250-399.000.
Ono, Yoshihiro: *See—*
Nahara, Akira; Ono, Yoshihiro; Namiki, Tomizo; Harada, Shigeo; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,198,237, Cl. 430-415.000.
Ontario Energy Corporation: *See—*
Sanford, Emerson; and Shaw, Robert, 4,197,937, Cl. 198-500.000.
Ore-Ida Foods, Inc.: *See—*
Citti, James E.; and Dienst, Carl S., 4,198,437, Cl. 426-104.000.
Orenstein & Koppel AG: *See—*
Frick, Egon, 4,197,953, Cl. 212-47.000.
Orkin, Ona V.: *See—*
Moore, James E.; Orkin, Ona V.; and Schroeter, Siegfried H., 4,198,465, Cl. 428-409.000.
Orlova, Valentina G.: *See—*
Konsetov, Vitaly V.; Kozlova, Galina I.; Orlova, Valentina G.; Dokukina, Ljudmila F.; Deryagina, Galina M.; Pavlova, Tatyana N.; Gavrichenkova, Eleonora A.; and Vasilieva, Natalia P., 4,198,383, Cl. 422-134.000.
Osanai, Akira, to Olympus Optical Co., Ltd. Method of producing a structure of connection terminals. 4,197,636, Cl. 29-882.000.
Osborn, John J., to Research Development Corporation. System for measurement of oxygen uptake and respiratory quotient. 4,197,857, Cl. 128-718.000.
Osborn, John J., to Research Development Corporation. Sensing liquid trap for respiratory gas analyzing systems. 4,197,858, Cl. 128-718.000.
Ost, Walter; and Thomas, Klaus, to Celamerck GmbH & Co. KG. Liquid fungitoxic and acaricidal compositions containing triforine. 4,198,410, Cl. 424-250.000.
Ostendorf, Hermann; and Warnke, Ernst P., to Siempelkamp Giesserei GmbH & Co. Apparatus for measuring or monitoring changes in the periphery of a vessel. 4,197,754, Cl. 73-781.000.
Otis Elevator Company: *See—*
Cilderman, Janis J.; and Kirincich, Joseph G., 4,198,196, Cl. 425-123.000.
Ott, Paul W.: *See—*
Van Steenwyk, Donald H.; Cash, John R.; and Ott, Paul W., 4,197,654, Cl. 33-304.000.
Otto, Charles W., to General Electric Company. Lubricant retaining system for a prime mover. 4,198,584, Cl. 310-90.000.
Otto, Rigobert: *See—*
Credner, Hans-Heinrich; Otto, Rigobert; and Schranz, Karl-Wilhelm, 4,198,239, Cl. 430-566.000.
Overstreet, Robbie J. Gas safety roof gauging control hatch adapter. 4,197,744, Cl. 73-421.00B.
Ovitz, Ernest G., III, to John H. Best and Sons, Inc. Display shelf assembly. 4,197,950, Cl. 211-134.000.
Owen, Gwilym E., Jr., to Owens-Corning Fiberglas Corporation. Polyurethane foams from polyol reaction products of N-α-alkylols with polyols. 4,198,490, Cl. 521-166.000.
Owens-Corning Fiberglas Corporation: *See—*
Harris, David A.; and Jones, James E., 4,197,923, Cl. 181-287.000.
Owen, Gwilym E., Jr., 4,198,490, Cl. 521-166.000.
Owens-Illinois, Inc.: *See—*
Amberg, Stephen W.; and Doherty, Thomas E., 4,197,948, Cl. 206-520.000.
Ozaki, Yukio: *See—*
Ono, Atsushi; Fujino, Shoji; Ozaki, Yukio; and Suzuki, Kentaro, 4,198,601, Cl. 455-73.000.
Ozawa, Akio; Sakamoto, Masaharu; and Ito, Hideo, to Pioneer Electronic Corporation. Transistor switching circuits with shortened response times. 4,198,578, Cl. 307-246.000.
Ozawa, Toshiyuki: *See—*
Yamashita, Norio; and Ozawa, Toshiyuki, 4,198,605, Cl. 455-161.000.
Ozen Co., Ltd.: *See—*
Miura, Yasuyuki, 4,198,057, Cl. 274-1.00A.
P. Ferrero & C. S.p.A.: *See—*
Dogliotti, Amilcare, 4,197,939, Cl. 206-44.00R.
Pacesetter Systems, Inc.: *See—*
Schulman, Joseph H.; and Kie Sioe Tan, Jozef I., 4,197,850, Cl. 128-419.0PG.
Palmer, John H.: *See—*
Gillings, Christopher; and Palmer, John H., 4,198,397, Cl. 424-83.000.
Palmer, Richard C., to RCA Corporation. Recording/playback apparatus facilitating track skip detection. 4,198,658, Cl. 358-128.600.
Palosi, Eva: *See—*
Ezer, Elemer; Szporny, Laszio; Forgach, Lilla; Palosi, Eva; Cholnoky, Eszter; Karpati, Egon; Hajos, Gyorgy; Hortobagyi, Gyozo; and Gidai, Katalin, 4,198,402, Cl. 424-232.000.
Pampuch, Klaus: *See—*
Brauer, Lothar; and Pampuch, Klaus, 4,197,841, Cl. 128-202.130.
Pan American Gyro-Tex Corporation: *See—*
Spiro, Earl M.; and Falcone, Basil J., 4,198,455, Cl. 428-126.000.
Panuski, William R. Shower curtain retainer. 4,197,616, Cl. 24-73.00R.
Panzone, Gianbattista: *See—*
Tarzia, Giorgio; and Panzone, Gianbattista, 4,198,502, Cl. 542-414.000.
Paper Manufacturers Company: *See—*
Zaidi, Syed M. H., 4,197,947, Cl. 206-438.000.
Papineau, Milton D.: *See—*
Huisveld, Peter, Jr.; Papineau, Milton D.; and Routh, Claude C., 4,198,703, Cl. 367-1.000.
Papuchon, Michel, to Thomson-CSF. Electro-optical switch and modulator. 4,198,116, Cl. 350-96.140.
Parker, Dawood, to G. D. Searle & Co. PO_2/PCO_2 sensor. 4,197,853, Cl. 128-635.000.
Parker, Edward H.: *See—*
Meador, Jim D.; and Parker, Edward H., 4,198,470, Cl. 428-457.000.
Parker-Hannifin Corporation: *See—*
Reinicke, Robert H., 4,197,835, Cl. 128-1.00R.
Shah, Atul, 4,198,079, Cl. 285-245.000.
Parker, Robert P., to RCA Corporation. D.C. Gain controlled amplifier. 4,198,652, Cl. 358-27.000.

Parker, Robert R.; and Mischenko, Nicholas, to Bell & Howell Company. Automatic focusing system for projectors. 4,198,138, Cl. 353-71.000.
Parker, Thomas A. High pressure dispensing system for mixed liquids. 4,197,872, Cl. 137-115.000.
Parker, Warde L.; and Riple, James C., to Garrett Corporation, The. Free turbine type gas turbine engine with variable free turbine guide vane control system. 4,197,699, Cl. 60-39.030.
Parr, Richard A.; Johnston, Mary H.; and McClure, John C., to United States of America, National Aeronautics and Space Administration. Preparation of monotectic alloys having a controlled microstructure by directional solidification under dopant-induced interface breakdown. 4,198,232, Cl. 75-135.000.
Patel, Dahyabhai M.: *See*—
Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; Patel, Dahyabhai M.; Won, Chong M.; and Alioto, Ronald L., 4,198,409, Cl. 424-249.000.
Patrick, E. Vincent; Spessard, Lewis C.; and Villhauer, Kurt, to United States of America, Army. Microchannel plate in wall fabrication, method and apparatus. 4,198,225, Cl. 65-43.000.
Patterson, Charles B.: *See*—
Qurnell, Franklin D.; and Patterson, Charles B., 4,197,652, Cl. 33-174.00Q.
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Krautwald, Walter, 4,198,008, Cl. 242-68.600.
Paul Forkardt Kommanditgesellschaft: *See*—
Steinberger, Josef, 4,198,067, Cl. 279-121.000.
Paul, Lynn E.: *See*—
Stowe, Grady K.; and Paul, Lynn E., 4,198,106, Cl. 316-4.000.
Paul, Maynard C.: *See*—
Nelson, George F.; Cosimini, Gregory J.; Johnson, Leslie H.; Lo, David S.; Paul, Maynard C.; and Torok, Ernest J., 4,198,686, Cl. 365-79.000.
Paulitsch, Hans, to Stahlwerke Peine-Salzgitter Aktiengesellschaft. Cooling arrangement. 4,197,730, Cl. 72-201.000.
Paulke, Monika; Hohmann, Eugen; and Nickel, Bernd, to Siemens Aktiengesellschaft. Electrical pulp testing instrument. 4,197,641, Cl. 433-32.000.
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Oeckl, Siegfried; Genth, Hermann; Paulus, Wilfried; Rother, Heinz-Joachim; Stendel, Wilhelm; Brandes, Wilhelm; and Kraus, Peter, 4,198,428, Cl. 424-302.000.
Pauri, Carlo A.: *See*—
Bertini, Franco; and Pauri, Carlo A., 4,198,348, Cl. 260-563.00C.
Pavlova, Tatyana N.: *See*—
Konsetov, Vitaly V.; Kozlova, Galina I.; Orlova, Valentina G.; Dokukina, Ljudmila F.; Deryagina, Galina M.; Pavlova, Tatyana N.; Gavrichenkova, Eleonora A.; and Vasilieva, Natalia P., 4,198,383, Cl. 422-134.000.
Payne, John M. Electrostatic cameras. 4,198,139, Cl. 354-3.000.
Pazos, Jose F., to Du Pont de Nemours, E. I., and Company. Photopolymerizable composition containing an o-nitroaromatic compound as photoinhibitor. 4,198,242, Cl. 430-286.000.
Pearce, Ralph R., to EMI Limited. Magnetic recording. 4,197,989, Cl. 235-493.000.
Pease, Floyd T.; Ray, Donald R.; Steddum, Riddle E.; and Crager, Bruce L., to Offshore Company, The. Production riser. 4,198,179, Cl. 405-195.000.
Pegel, Karl H. Active plant extracts of hypoxidaceae and their use. 4,198,401, Cl. 424-195.000.
Pelco Sales: *See*—
Mathisen, William D., 4,198,656, Cl. 358-127.000.
Pelish, James D. Solar collector system using slate absorber panels. 4,197,833, Cl. 126-432.000.
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Hooykaas, Carel W. J., 4,198,450, Cl. 427-427.000.
Pelton, Peter G., to Continental Group, Inc., The. Method of applying product bags in aerosol barrier packages. 4,198,365, Cl. 264-249.000.
Penn, Laurence R., to Liquid Control Incorporated. Phase blending static mixing process and apparatus. 4,198,168, Cl. 366-336.000.
Pepper, William, Jr., to Peptek, Inc. System for producing electric field with predetermined characteristics and edge terminations for resistance planes therefor. 4,198,539, Cl. 178-18.000.
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Perez, Arthur: *See*—
Abraham, Fayez F.; and Perez, Arthur, 4,197,718, Cl. 62-248.000.
Perkins, William V. Load elevator mechanism for unstable loads. 4,198,188, Cl. 414-545.000.
Persson, Gert: *See*—
Carlstrom, Per; Lundberg, Bo; and Persson, Gert, 4,198,178, Cl. 404-112.000.
Peter Lancier Maschinenbau-Hafenhutte GmbH & Co. KG: *See*—
Baur, Fritz; and Stemmer, Gunther, 4,197,967, Cl. 222-190.000.
Peters, Manfred: *See*—
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Peters Manufacturing Company, Inc.: *See*—
Yaros, Anthony P., 4,197,756, Cl. 74-230.300.
Peterson, Francis C., to C. Hager & Sons Hinge Manufacturing Company. Security screw, driver therefor, and process. 4,197,889, Cl. 145-50.00A.
Peterson, Roy E. Timer. 4,198,551, Cl. 200-33.00R.
Petro-Canada Exploration Inc.: *See*—
Sanford, Emerson; and Shaw, Robert, 4,197,937, Cl. 198-500.000.
Pettitt, Bruce C.: *See*—
Lerner, Melvin; Hood, Lyal V.; Rommel, Marjorie A.; Pettitt, Bruce C.; and Erikson, Charles M., 4,198,208, Cl. 23-232.00R.
Pfaff, Lloyd A. Process for making laminated roofing shingles. 4,198,257, Cl. 156-260.000.
Philipp, Adolf H.; and Jirkovsky, Ivo L., to Ayerst McKenna & Harrison Ltd. 2-Substituted-3-methyl-γ-pyrone tricyclic derivatives. 4,198,426, Cl. 424-283.000.
Phillips Petroleum Company: *See*—
Bertus, Brent J.; McKay, Dwight L.; and Mark, Harold W., 4,198,317, Cl. 252-411.00R.
Philpott, William J. M.: *See*—
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Phone-Mate, Inc.: *See*—
Buglewicz, Neal J., 4,198,544, Cl. 179-6.00R.
Picker Corporation: *See*—
Gacki, Leonard W.; and Daly, Robert E., 4,197,942, Cl. 206-219.000.
Pierce, Jeffrey D., to Heatco, Inc. Heat exchanger for use in fireplace. 4,197,829, Cl. 126-121.000.
Pierce, Linden W., to General Electric Company. Vaporization cooled dielectric fluid pump. 4,198,191, Cl. 417-369.000.
Piffaretti, Jean-Marcel: *See*—
Beck, Alexander; Piffaretti, Jean-Marcel; and Weinmann, Dietmar, 4,197,840, Cl. 128-76.00R.
Pilaeva, Lidia P.: *See*—
Aliev, Vagab S.; Rizaev, Ramiz G. K. O.; Gadzhi-Kasumov, Veli S. M. O.; Ter-Sarkisov, Beniamin G.; Talyshinsky, Rashid M.; Pilaeva, Lidia P.; and Seifullaeva, Zhalya M. K., 4,198,536, Cl. 585-626.000.
Pilkington Brothers Limited: *See*—
Wright, Donald C.; and Marsh, Brian, 4,198,226, Cl. 65-114.000.
Pillon, Marcel O., to Pont-A-Mousson S.A. Support jack more particularly adapted to support a tool holder of a machine tool and in particular of a polishing machine. 4,197,786, Cl. 92-86.000.
Pinhak, Ernest M.: *See*—
Singh, Balbir; and Pinhak, Ernest M., 4,197,774, Cl. 83-374.000.
Pioneer Electronic Corporation: *See*—
Kanamaru, Hitoshi, 4,198,657, Cl. 358-128.500.
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Pipkorn, David N.: *See*—
Cha, Charles L.; Denlinger, George W.; Pipkorn, David N.; and Spyrou, Elias, 4,198,643, Cl. 346-75.000.
Pitha, John J., to General Electric Company. Sinterless zinc oxide varistor devices. 4,198,443, Cl. 427-34.000.
Pittman, Roland, to Applied Devices Corporation. Multiple sensing device and sensing devices therefor. 4,197,737, Cl. 73-178.00R.
Pittsburgh Corning Corporation: *See*—
Kirkpatrick, John D., 4,198,224, Cl. 65-22.000.
Plachy, William M.: *See*—
O'Brian, Edward D.; and Plachy, William M., 4,198,069, Cl. 280-42.000.
Plasko, Emil R., to Emerson Electric Co. Method of making a thermally actuatable electrical switch construction. 4,197,634, Cl. 29-622.000.
Pletcher, Jackie E.; Johnson, Brady G.; and Armstrong, Richard G., to Johns-Manville Corporation. Power cable guide for high-mast luminaire raising and lowering system. 4,198,022, Cl. 248-320.000.
Plexa Incorporated: *See*—
Timbes, Larry C.; and Price, Julian H., 4,198,043, Cl. 272-56.50R.
Plumadore, John D., to James River Graphics Inc. Electrostatic drive system. 4,197,970, Cl. 226-94.000.
Polaroid Corporation: *See*—
Erlichman, Irving, 4,198,135, Cl. 352-130.000.
Land, Edwin H., 4,198,152, Cl. 354-317.000.
Politze, Walter: *See*—
Ehedy, Gustav; Kemter, Heinz; Ponitz, Wilfried; Ehrlich, Engelbert; Politze, Walter; Scholtis, Walter; and Wunsch, Wolfgang, 4,197,723, Cl. 66-85.00A.
Polmanteer, Keith E.: *See*—
Birdsall, Arthur A.; Fitzgerald, John K.; Jones, David P.; and Polmanteer, Keith E., 4,198,131, Cl. 351-160.00R.
Polzin, Henry H.; and Batch, Joseph, to Barber-Greene Company. Quick release for gyratory crusher concave. 4,198,003, Cl. 241-30.000.
Pommer, Ernst-Heinrich: *See*—
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Ponitz, Wilfried: *See*—
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Hildebrandt, Florian; and Popp, Joachim, 4,197,870, Cl. 137-43.000.
Porter, David R., to Boeing Company, The. Power equalizing multiport optical coupler. 4,198,118, Cl. 350-96.160.
PPG Industries, Inc.: *See*—
Buchwalter, Stephen L.; Jerabek, Robert D.; Chou, Lee-Pei H.; and Christenson, Roger M., 4,198,331, Cl. 260-29.2EP.

Preh, Elektrofeinmechanische Werke, Jakob Preh Nachf GmbH & Co.: *See*—
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Preiser, Herman S.: *See*—
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Prestele, Karl, to Siemens Aktiengesellschaft. Apparatus for the determination of the respiratory passageway impedance. 4,197,859, Cl. 128-720.000.
Preston, Norman H.: *See*—
Rayfield, Wilson P.; Preston, Norman H.; Ferguson, Ronald W.; Dear, Frederick H.; Korytkowski, Henry M.; Muster, Frank L.; and Karns, Ward L., 4,197,797, Cl. 101-90.000.
Price, Edward G.; and Rasmussen, Lewis C., to Beehive International. Timing control circuit. 4,198,574, Cl. 307-97.000.
Price, Julian H.: *See*—
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Pringle, William L.: *See*—
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Procter & Gamble Company, The: *See*—
Juneja, Prem S., 4,198,392, Cl. 424-48.000.
Pryor, Rochelle Y., 4,197,964, Cl. 221-50.000.
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Profitt, James A.: *See*—
Ong, Helen H.; and Profitt, James A., 4,198,417, Cl. 424-267.000.
Ong, Helen H.; and Profitt, James A., 4,198,418, Cl. 424-267.000.
Ong, Helen H.; and Profitt, James A., 4,198,419, Cl. 424-267.000.
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Prunier, Jean-Claude; and Bellemon, Yves, to Societe Nouvelle de Connexion. Connector with self-centering elements for optical conductors. 4,198,122, Cl. 350-96.210.
Prussin, Samuel: *See*—
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,198,441, Cl. 427-2.000.
Pryor, Rochelle Y., to Procter & Gamble Company, The. Starter means for a pop-up type sheet product dispensing package having a restrictive dispensing orifice. 4,197,964, Cl. 221-50.000.
Punja, Nazim, to Imperial Chemical Industries Limited. 2(2,2-Dichlorovinyl)-3,3-dimethyl-cyclopropane carboxylates. 4,198,347, Cl. 260-464.000.
Puretic, Mario J. Gate apparatus for fish unloading system. 4,197,805, Cl. 114-255.000.
Puschel, Walter: *See*—
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Quemner, Jean M.: *See*—
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Quinter, Wilfred C., to T. E. Co. Device for clamping a workpiece to a supporting surface. 4,198,038, Cl. 269-137.000.
Quivy, Michel G.: *See*—
Cluzel, Philippe H.; Quivy, Michel G.; and Tocquet, Bernard, 4,197,920, Cl. 181-175.000.
Qurnell, Franklin D.; and Patterson, Charles B., to General Electric Company. Plane of reference device. 4,197,652, Cl. 33-174.00Q.
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Raether, Wolfgang: *See*—
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Ragland, Frank R., Jr., to RCA Corporation. Deflection yoke assembly including a beam positioning magnet arrangement. 4,198,614, Cl. 335-211.000.
Ramcor, Inc.: *See*—
Anada, Harish R., 4,197,911, Cl. 166-261.000.
Randolph, Robert W.: *See*—
Hillstead, David P.; Randolph, Robert W.; and Behle, Gunter R., 4,198,032, Cl. 251-144.000.
Rao, M. Prabhakar. Mortised block puzzle. 4,198,053, Cl. 273-160.000.
Raque, Glen F.; and Robinson, Edward A. Pizza machine. 4,197,794, Cl. 99-450.100.
Rasberger, Michael, to Ciba-Geigy Corporation. Substituted malonic acid derivatives and their use as stabilizers. 4,198,334, Cl. 260-45.80N.
Rase, Jean: *See*—
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Rasmussen, Lewis C.: *See*—
Price, Edward G.; and Rasmussen, Lewis C., 4,198,574, Cl. 307-97.000.
Rathert, Larry F. Tossing game apparatus. 4,198,048, Cl. 273-339.000.
Raudys, Vytas A.; and DeVitto, Ronald R., to Union Carbide Corporation. Hanger-clip closure for casings. 4,197,983, Cl. 229-65.000.
Rauscher, Frank J. Intravenous alarm device. 4,198,626, Cl. 340-613.000.
Ray, Donald R.: *See*—
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Ray, Louis M., Jr.; Littrell, George R., Jr.; Buckland, Arliff E., Jr.; and Brett, Gordon D., to Collier and Associates. Method and apparatus for repair of asphalt surfaces. 4,198,177, Cl. 404-75.000.
Raychem Corporation: *See*—
Harrison, John D.; and Jervis, James E., 4,198,081, Cl. 285-381.000.
Lyons, Bernard J.; Cammack, Travers K., II; and Nyberg, David D., 4,198,310, Cl. 252-63.200.
Rayfield, Wilson P.; Preston, Norman H.; Ferguson, Ronald W.; Dear, Frederick H.; Korytkowski, Henry M.; Muster, Frank L.; and Karns, Ward L., to Burroughs Corporation. Modular high speed printing system. 4,197,797, Cl. 101-90.000.
Raymond, Gordon H.: *See*—
Doumas, John J.; Molof, Alan H.; Raymond, Gordon H.; and Wikstrom, Lee, 4,198,296, Cl. 210-29.000.
RCA Corporation: *See*—
Ahmed, Adel A. A., 4,198,581, Cl. 307-310.000.
Alphonse, Gerard A.; and Saunders, William C., Jr., 4,197,921, Cl. 181-176.000.
Bowman, David F., 4,198,640, Cl. 343-754.000.
Dixon, Frederick L.; Fox, Leonard P.; and Trachman, Edward G., 4,198,060, Cl. 274-47.000.
Eng, Kai Yin, 4,198,611, Cl. 333-105.000.
Gibson, John J., 4,198,641, Cl. 343-797.000.
Hsu, Sheng T., 4,198,252, Cl. 148-187.000.
Kamprath, Theodore, 4,197,630, Cl. 29-571.000.
Mezrich, Reuben S.; and Vilkomerson, David H. R., 4,197,749, Cl. 73-625.000.
Palmer, Richard C., 4,198,658, Cl. 358-128.600.
Parker, Robert P., 4,198,652, Cl. 358-27.000.
Ragland, Frank R., Jr., 4,198,614, Cl. 335-211.000.
Scott, Richard D., 4,198,145, Cl. 354-83.000.
Sterzer, Fred, 4,197,860, Cl. 128-804.000.
Vilkomerson, David H. R.; and Mezrich, Reuben S., 4,197,751, Cl. 73-633.000.
Wu, Chung P., 4,198,246, Cl. 148-1.500.
Reach, Roy W.; Kahn, William M.; and Shapiro, David, to Hewlett-Packard Company. Electronic calculator with keyboard-controlled unary function capability. 4,198,684, Cl. 364-900.000.
Reade, Richard F., to Corning Glass Works. Glasses and glass-ceramics with metal alloy surfaces. 4,198,466, Cl. 428-410.000.
Reade, Richard F., to Corning Glass Works. Glass articles with $NiFe_2O_4$, $CoFe_2O_4$, or $(Co,Ni)Fe_2O_4$ surface layers. 4,198,467, Cl. 428-410.000.
Reddersen, Brad R.; Zech, Richard G.; and Roberts, Howard N., to Harris Corporation of Cleveland, Ohio. Digital optical recorder-reproducer system. 4,198,701, Cl. 365-127.000.
Redfern, Thomas P.: *See*—
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Redmond, Benjamin. Seat belt safety system for motor vehicles. 4,197,919, Cl. 180-269.000.
Redux Corporation, Inc., The: *See*—
Deane, Thomas N., 4,198,294, Cl. 210-23.00F.
Reese, Jack L.; Grubb, Robert G.; and Chacour, Selim A., to Allis-Chalmers Corporation. Apparatus for machining and statically balancing a large and heavy workpiece. 4,197,629, Cl. 29-560.000.
Regehr, Ulrich. Fin deflector for separating liquid from a liquid/vapor mixture. 4,198,215, Cl. 55-185.000.
Rehm, Ernest L.: *See*—
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Reichler, Allen S.; and Swaton, Larry E., to Abbott Laboratories. Cuvette ampule for use with automatic analyzer apparatus. 4,198,484, Cl. 435-296.000.
Reichstadt, Hans U. Window shade casing. 4,197,896, Cl. 160-107.000.
Reinicke, Robert H., to Parker-Hannifin Corporation. Prosthetic urinary sphincter control device. 4,197,835, Cl. 128-1.00R.
Reissig, Dirk: *See*—
Muth, Hans-Albrecht; Stark, Rudolf; Marwitz, Hans-Gunther v. d.; Hundemer, Peter; Estel, Heinz; and Reissig, Dirk, 4,198,093, Cl. 296-78.100.
Reneau, Paul A. Automatic memory and environmental security system. 4,198,573, Cl. 307-10.00R.
Rennie, James C.; Thompson, Philip M.; and Davies, Vernon I., to Canadian Patents & Development Limited. Apparatus for displaying VHF-direction finder data on a radar PPI. 4,198,631, Cl. 343-5.0EM.
Rentzea, Costin; Pommer, Ernst-Heinrich; Mappes, Celia J.; and Zeeh, Bernd, to BASF Aktiengesellschaft. 1,3-Bis-(trihalomethylsulfenyl)-imidazoline-2,4-diones. 4,198,423, Cl. 424-273.00R.
Research Development Corporation: *See*—
Osborn, John J., 4,197,857, Cl. 128-718.000.
Osborn, John J., 4,197,858, Cl. 128-718.000.
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Hoover, Maurice W., 4,198,439, Cl. 426-632.000.
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Reutter, Siegfried: *See*—
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Reyes, Jose V. Traction device for motor vehicles. 4,197,895, Cl. 152-416.000.
Reynolds Metals Company: *See*—
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Rheinfelder, William A. Swept frequency circuit for precision gain or loss measurements. 4,198,598, Cl. 324-57.0SS.
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Ribka, Joachim: *See—*
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Richard Heinze GmbH & Co, KG, Firma: *See—*
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Samour, Carlos M.; and Richards, Mildred C., 4,198,520, Cl. 560-83.000.
Richardson, Dora N., to Imperial Chemical Industries Limited. Pharmaceutical compositions. 4,198,435, Cl. 424-330.000.
Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Ezer, Elemer; Szporny, Laszio; Forgach, Lilla; Palosi, Eva; Cholnoky, Eszter; Karpati, Egon; Hajos, Gyorgy; Hortobagyi, Gyozo; and Gidai, Katalin, 4,198,402, Cl. 424-232.000.
Ricoh Company, Ltd.: *See—*
Yano, Takashi; and Shibusawa, Mitsuo, 4,197,813, Cl. 118-694.000.
Rider, Joseph A. Simethicone antacid tablet. 4,198,390, Cl. 424-21.000.
Riecker, Johann G.; and Grohmann, Klaus, to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Equipment for extracting and purifying dirty gases arising on the coke side of a battery of chamber coke ovens with vertical flues. 4,198,275, Cl. 202-263.000.
Riedel, Dieter, to Drabert Sohne, Firma. Apparatus for continuous pressing and steaming of fabric. 4,197,663, Cl. 38-3.000.
Right, Robert W.: *See—*
Mande, Irving; and Right, Robert W., 4,198,625, Cl. 340-517.000.
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Condouris, George A.; Yelnosky, John; Riley, Richard L.; Won, Chong M.; Douglas, George H.; and Studt, William L., 4,198,408, Cl. 424-249.000.
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Robbins, John C.; and Kinrade, John D., to Scintrex Limited. Apparatus and method for uranium determination. 4,198,568, Cl. 250-459.000.
Robert Bosch GmbH: *See—*
Dietrich, Walter; and Bauer, Manfred, 4,197,790, Cl. 93-53.00M.
Holzbaur, Siegfried, 4,197,824, Cl. 123-139.0AW.
Kamin, Gerhard R., 4,198,653, Cl. 358-105.000.
Leiber, Heinz, 4,197,710, Cl. 60-547.00A.
Schwartz, Reinhard; and Schelhas, Peter, 4,197,823, Cl. 123-119.00D.
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Robertson, John M., to Rolls-Royce Limited. Rotor support structure for a gas turbine engine. 4,197,702, Cl. 60-262.000.
Robinson, Edward A.: *See—*
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Robinson, Frank; and Whatmough, Nigel S., to Courtaulds Limited. Knitting method. 4,197,724, Cl. 66-176.000.
Robinson, Sam P., to James G. Brown & Associates, Inc. Multistage incineration of halogenated hydrocarbon containing waste streams. 4,198,384, Cl. 423-488.000.
Roche, Gaston P.: *See—*
Arnaud, Claude J.; Quemner, Jean M.; and Roche, Gaston P., 4,198,374, Cl. 422-111.000.
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Gergis, Isoris S.; and Chen, Thomas T., 4,198,690, Cl. 365-15.000.
Kobayashi, Tsutomu, 4,198,692, Cl. 365-27.000.
Kohl, Arthur L., 4,198,380, Cl. 423-242.000.
Rodriguez, Ricardo A. Controlled thrust, rotary, adjustable topography sprinkler. 4,198,001, Cl. 239-227.000.
Roelevink, Bauke J., to U.S. Philips Corporation. Flash bulb unit. 4,198,673, Cl. 362-13.000.
Roger, Harry. Relay indicator valve. 4,197,867, Cl. 137-1.000.
Rogers, Norman H.; and Stevenson, Robert, to Beecham Group Limited. 3-Carbamoyl substituted-7-ureido substituted cephalosporins. 4,198,503, Cl. 544-22.000.
Rogers, Patrick J. Incense burner. 4,198,375, Cl. 422-126.000.
Rogovin, Zakhar A.: *See—*
Lishevskaya, Marina O.; Morin, Boris P.; Stanchenko, Galina I.; Vanjushkina, Tatyana A.; and Rogovin, Zakhar A., 4,198,326, Cl. 260-17.4GC.
Rohm and Haas Company: *See—*
Kollman, Gerald E.; and Irwin, Elwood N., 4,198,227, Cl. 71-115.000.
Rohrbach, Hans-Jorg, to Rohrbach Technologie, Kommanditgesellschaft Baustofftechnik GmbH & Co. Method of and apparatus for operating industrial furnace systems. 4,198,201, Cl. 432-13.000.
Rohrbach Technologie, Kommanditgesellschaft Baustofftechnik GmbH & Co.: *See—*
Rohrbach, Hans-Jorg, 4,198,201, Cl. 432-13.000.
Rolfe, Norman F., to Sperry Corporation. Magnetic clearance sensor. 4,198,006, Cl. 241-222.000.
Roll, Guy; and Savage, Milton B. Coolant separator. 4,197,678, Cl. 51-267.000.
Rolls-Royce Limited: *See—*
Robertson, John M., 4,197,702, Cl. 60-262.000.
Roma, Pierpaolo: *See—*
Bertelli, Guido; Roma, Pierpaolo; and Locatelli, Renato, 4,198,328, Cl. 260-22.00A.
Rommel, Marjorie A.: *See—*
Lerner, Melvin; Hood, Lyal V.; Rommel, Marjorie A.; Pettitt, Bruce C.; and Erikson, Charles M., 4,198,208, Cl. 23-232.00R.
Roper, Charles R., Jr.; and Hetherington, Roy, Jr., to Lukens Steel Company. Steel substrate for glassing. 4,198,249, Cl. 148-36.000.
Roper, Graham B., to Crowcon (Instruments) Limited. Electrical remote sensing system. 4,198,621, Cl. 340-210.000.
Rosemount Inc.: *See—*
Frick, Roger L., 4,197,739, Cl. 73-194.0VS.
Rosenberg, Alexander. Apparatus for determining blood clotting time. 4,197,734, Cl. 73-64.100.
Rosner, Manfred; and Raether, Wolfgang, to Hoechst Aktiengesellschaft. Substituted 2-phenyl-1,2,4-triazine-3,5(2H,4H)-diones, and coccidiostatic agents containing same. 4,198,407, Cl. 424-249.000.
Rother, Heinz-Joachim: *See—*
Oeckl, Siegfried; Genth, Hermann; Paulus, Wilfried; Rother, Heinz-Joachim; Stendel, Wilhelm; Brandes, Wilhelm; and Kraus, Peter, 4,198,428, Cl. 424-302.000.
Routh, Claude C.: *See—*
Huisveld, Peter, Jr.; Papineau, Milton D.; and Routh, Claude C., 4,198,703, Cl. 367-1.000.
Rubber Research Elastomerics, Inc.: *See—*
Stark, Fred J., Jr., 4,198,485, Cl. 521-55.000.
Rubin, Howard: *See—*
Barry, Richard; and Rubin, Howard, 4,198,507, Cl. 544-267.000.
Ruchinsky, Vitaly R.: *See—*
Shafranovsky, Alexandr V.; Ruchinsky, Vitaly R.; Olevsky, Viktor M.; Gavrilin, Vladimir P.; Chubukov, Vladimir K.; Gromoglasova, Valentina N.; Bushev, Vladimir S.; Baskov, Jury A.; Kurkovskaya, Violetta V.; Gurkov, Boris A.; and Evkin, Ivan F., 4,198,361, Cl. 261-89.000.
Rudolphy, Albert; and Dathe, Wolfgang, to Hoechst Aktiengesellschaft. Process for the preparation of reaction products of natural resinic acids and formaldehyde. 4,198,329, Cl. 260-24.000.
Rudzena, William L.: *See—*
Garrett, Scott T.; Fasana, Robert R.; and Rudzena, William L., 4,197,848, Cl. 128-247.000.
Runyan, Steven R.: *See—*
Ciupke, Werner W.; Runyan, Steven R.; and Sherlock, Hugh P., 4,198,134, Cl. 352-129.000.
Rutter, Harold T.: *See—*
Althen, Wayne W.; and Rutter, Harold T., 4,197,680, Cl. 51-343.000.
Rutter, Jerry L.: *See—*
Bergman, Janice M.; Bevernitz, Kurt J.; and Rutter, Jerry L., 4,198,434, Cl. 424-320.000.
Ruttiger, Anton: *See—*
Vogt, Alfred; Veith, Bernd; and Ruttiger, Anton, 4,198,620, Cl. 340-171.0PF.
Ryan, Wayne L. Method for preparing a platelet reference control. 4,198,206, Cl. 23-230.00B.
Saab-Scania Aktiebolag: *See—*
Ilhage, Bertil G.; and Envall, Bjorn E. A., 4,198,674, Cl. 362-80.000.
Saari, Walfred S., to Merck & Co., Inc. Amino acid esters. 4,198,413, Cl. 424-256.000.
Sadler, Brian: *See—*
Barton, Stephen; and Sadler, Brian, 4,198,651, Cl. 358-21.00V.
Sage, Paul, to Verdol S.A. Devices for controlling the heddles of a loom. 4,197,881, Cl. 139-59.000.
Saint-Gobain Industries: *See—*
Degenne, Michel, 4,197,738, Cl. 73-190.00H.
Saito, Tadao; Nozawa, Takamitsu; and Yamanaka, Nobuo, to Yoshino Kogyosho Co., Ltd. Molded article having stereoscopic decorative pattern and fabrication process therefor. 4,198,457, Cl. 428-161.000.
Saito, Takeo: *See—*
Komatsu, Fumito; Saito, Takeo; and Wakabayashi, Nobuaki, 4,197,778, Cl. 84-95.00R.
Saitou, Tadashi: *See—*
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,198,195, Cl. 418-133.000.
Sakae Tsushin Kogyo Co. Ltd.: *See—*
Shimoda, Eitaro, 4,197,765, Cl. 74-553.000.
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, to Nippon Piston Ring Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary fluid pump or compressor. 4,198,195, Cl. 418-133.000.
Sakamoto, Masaharu: *See—*
Ozawa, Akio; Sakamoto, Masaharu; and Ito, Hideo, 4,198,578, Cl. 307-246.000.
Sakamoto, Shizuo: *See—*
Konii, Susumu; Yoshida, Masatoshi; Yoshimura, Yukio; Ishibashi, Takehiko; and Sakamoto, Shizuo, 4,198,499, Cl. 528-146.000.
Salatka, Robert G. Aluminum can compactor. 4,197,796, Cl. 100-293.000.
Salmon, Jonathan S., to United Kingdom Atomic Energy Authority. Fuel sub-assemblies for nuclear reactors. 4,198,272, Cl. 176-40.000.

Sam Stein Associates Inc.: *See*—
Deal, Douglas O.; and Miller, Michael E., 4,198,167, Cl. 366-152.000.
Samibem, S.A.: *See*—
Weber, Marcel, 4,197,692, Cl. 56-13.600.
Samour, Carlos M.; and Richards, Mildred C., to Kendall Company, The. Nonionic monomeric emulsion stabilizers. 4,198,520, Cl. 560-83.000.
Sanczuk, Stefan; and Hermans, Hubert K. F., to Janssen Pharmaceutica N.V. N-aryl-N-(1-L-4-piperidinyl)-arylaceytamides. 4,198,411, Cl. 424-251.000.
Sand, Roger D., to General Motors Corporation. Control for an electric motor-driven telescoping radio antenna. 4,198,637, Cl. 343-715.000.
Sanders Associates, Inc.: *See*—
Misek, Victor A.; Hastbacka, Albin A.; Beairsto, Robert J.; and Trasatti, Alphonse J., 4,198,623, Cl. 340-365.00P.
Sandor Vajna: *See*—
Vajna, Sandor, 4,198,295, Cl. 210-25.000.
Sandoz Ltd.: *See*—
Frei, Alfred; Moser, Helmut; Schoefberger, Georg; and Schweizer, August, 4,198,268, Cl. 162-162.000.
Sandri, Alfred: *See*—
Feldbaumer, Erich; Loquenz, Heinz; and Sandri, Alfred, 4,198,385, Cl. 423-566.000.
Sandrock, Gerhard: *See*—
Merger, Franz; Strohmeyer, Max; Sandrock, Gerhard; Hohenschutz, Heinz; Schroff, Ludwig; and Nestler, Gerhard, 4,198,531, Cl. 568-793.000.
Sandy, Alston C. Container and lip attachment therefor. 4,197,961, Cl. 220-354.000.
Sanford, Emerson; and Shaw, Robert, to Petro-Canada Exploration Inc.; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity; Ontario Energy Corporation; Imperial Oil Limited; Canada-Cities Service, Ltd.; and Gulf Oil Canada Limited. Non-ionic emulsifying release agent for bituminous sands conveyor belt. 4,197,937, Cl. 198-500.000.
Sankyo Company Limited: *See*—
Mistui, Seiji; Ogiso, Akira; and Indo, Akira, 4,198,425, Cl. 424-279.000.
Sano, Yasushi: *See*—
Iijima, Hiroshi; and Sano, Yasushi, 4,198,659, Cl. 358-150.000.
Santora, Norman J.: *See*—
Nuss, George W., Jr.; Santora, Norman J.; and Douglas, George H., 4,198,349, Cl. 260-566.00F.
Sanwa Kagaku Kenkyusho Co., Ltd.: *See*—
Shioiri, Takayuki; Kawai, Nobutaka; and Ban, Masatoshi, 4,198,510, Cl. 546-22.000.
Sanyo Electric Co., Ltd.: *See*—
Yamashita, Norio; and Ozawa, Toshiyuki, 4,198,605, Cl. 455-161.000.
Saraniero, Anthony: *See*—
Capolupo, Guy, 4,198,026, Cl. 248-552.000.
Sasaki, Masao, to Oki Electric Industry Co., Ltd. Paper feed mechanism. 4,197,969, Cl. 226-79.000.
Sasaki, Mitsuo: *See*—
Mehada, Masashi; Kawai, Masahiko; Sasaki, Mitsuo; and Kimura, Tohru, 4,198,278, Cl. 204-129.750.
Sato Gasei Co., Ltd.: *See*—
Suzuki, Tadashi, 4,198,370, Cl. 264-291.000.
Sato, Hisato; Takatsu, Haruyoshi; and Fujita, Yutaka, to Dainippon Inc. & Chemicals, Inc.; and Hitachi, Ltd. 3'-Chloro-4'-cyanophenyl 4-n-alkylbenzoates. 4,198,312, Cl. 252-299.000.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Label arranging device for label printing machine. 4,197,799, Cl. 101-291.000.
Sauerland, Franz L. Apparatus for automatic lapping control. 4,197,676, Cl. 51-165.00R.
Saunders, William C., Jr.: *See*—
Alphonse, Gerard A.; and Saunders, William C., Jr., 4,197,921, Cl. 181-176.000.
Sauter Feinmechanik GmbH: *See*—
Thumm, Helmut, 4,197,770, Cl. 82-14.00C.
Savage, Milton B.: *See*—
Roll, Guy; and Savage, Milton B., 4,197,678, Cl. 51-267.000.
Sawada, Daisaku; Shigematsu, Takashi; and Takeda, Yuji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for controlling vacuum advancing of ignition timing. 4,197,821, Cl. 123-117.00A.
Sawyer, Richard D., to United Technologies Corporation. Negative cell detector for a multi-cell fuel cell stack. 4,198,597, Cl. 324-434.000.
Scattergood, Edgar: *See*—
Tytell, Alfred A.; Scattergood, Edgar; and Field, Arthur K., 4,198,479, Cl. 435-2.000.
Schaaf, Robert L.; Kan, Peter T.; and Cenker, Moses, to BASF Wyandotte Corporation. Polyurethane foams prepared from highly stable liquid carbodiimide-containing 4,4'-diphenylmethane diisocyanate. 4,198,489, Cl. 521-160.000.
Schacter, Robert I., to Geldin, Max, a part interest. Gate latch. 4,198,085, Cl. 292-217.000.
Schadt, Martin: *See*—
Boller, Arthur; Germann, Alfred; Schadt, Martin; and Scherrer, Hanspeter, 4,198,130, Cl. 350-350.000.
Schaeffer-Homberg GmbH, Firma: *See*—
Appelt, Horst G., 4,197,617, Cl. 24-90.00R.
Schal, Wilfried: *See*—
Schindler, Johannes G.; and Schal, Wilfried, 4,197,852, Cl. 128-635.000.
Schamberg, Eckehard: *See*—
Laqua, Arnold; Holtschmidt, Ulrich; Schamberg, Eckehard; and Hellwig, Dieter, 4,198,332, Cl. 260-29.4UA.
Schamberger, Jorg; and Zimmermann, Heinrich, to Dual Gebruder Steidinger. Pick-up with exchangeable stylus. 4,198,058, Cl. 274-37.000.
Schaper, Ulf-Armin: *See*—
Conrad, Jens; Schaper, Ulf-Armin; and Bruns, Klaus, 4,198,323, Cl. 252-522.00R.
Scheicher, Hans M. F. Drill head and bone drill. 4,197,645, Cl. 433-128.000.
Schelhas, Peter: *See*—
Schwartz, Reinhard; and Schelhas, Peter, 4,197,823, Cl. 123-119.00D.
Scheller, Thomas: *See*—
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,198,136, Cl. 352-169.000.
Schellhorn, Verne L., to Aerial Industrial Inc. Apparatus for cutting concrete columns. 4,197,828, Cl. 125-23.00C.
Scherrer, Hanspeter: *See*—
Boller, Arthur; Germann, Alfred; Schadt, Martin; and Scherrer, Hanspeter, 4,198,130, Cl. 350-350.000.
Schertz, Burtron D.; Smith, Wayne A.; and Hammond, Arthur R., to General Motors Corporation. Stereo composite processor for stereo radio receiver. 4,198,543, Cl. 179-1.0GM.
Schertz, Burtron D.: *See*—
Aldridge, Frederick A.; Gotshall, James T.; and Schertz, Burtron D., 4,198,603, Cl. 455-234.000.
Scheurecker, Werner, to Voest-Alpine Aktiengesellschaft. Arcuate supporting and guiding construction for continuously cast strands. 4,197,903, Cl. 164-448.000.
Scheve, Bernard J., to Hercules Incorporated. Photopolymerizable composition. 4,198,238, Cl. 430-286.000.
Schieferstein, Robert J.; and Kilayko, Enrique L., to Liquid Metronics Incorporated. Ball check valve. 4,197,875, Cl. 137-533.110.
Schiff, Ernest; and Carmen, Gerard J. Skylight escape system. 4,197,682, Cl. 52-72.000.
Schindler, Johannes G.; and Schal, Wilfried, to Dr. E. Fresenius Chemisch Pharmazeutische Industrie KG Apparatebau KG. Catheter electrode for electrochemical analysis. 4,197,852, Cl. 128-635.000.
Schlichte, Max, to Siemens Aktiengesellschaft. Time division multiplex switching network. 4,198,546, Cl. 370-58.000.
Schloemann-Diemag AG: *See*—
Streubel, Hans; and Marti, Heinrich, 4,197,904, Cl. 164-448.000.
Schlumberger Technology Corporation: *See*—
Young, David E., 4,197,879, Cl. 137-629.000.
Schmidt, Gerhard: *See*—
Eistert, Theodor; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Schmidt, Gerhard; and Nather, Lothar, 4,197,690, Cl. 56-10.200.
Schmidt, Hans-Georg, to Dynamit Nobel Aktiengesellschaft. 2,5,5-Trimethyl-3-carbalkoxy-4(β,β-dihalovinyl)-4,5-dihydrofurans. 4,198,341, Cl. 260-347.500.
Schmidt, Hans-Georg, to Dynamit Nobel Atkiengesellschaft. Method of preparing dihalogen vinyl cyclopropanecarboxylic acid esters. 4,198,342, Cl. 260-347.500.
Schmidt, Hans-Georg, to Dynamit Nobel Aktiengesellschaft. Method of preparing dihalogen vinyl cyclopropanecarboxylic acid esters. 4,198,343, Cl. 260-347.500.
Schmitt, Frederick L.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joaquin; Kiwala, Jacob; and Schreiber, William L., 4,198,309, Cl. 252-174.110.
Schmitt, Kirk D., to Mobil Oil Corporation. Preparation of tertiary alkylphosphorodichloridite derivatives. 4,198,355, Cl. 260-983.000.
Schneider, Alan A.: *See*—
Kramer, David N.; Long, Stephen E.; and Schneider, Alan A., 4,198,281, Cl. 204-195.00R.
Schneider, Horst W., to California Institute of Technology. Cleaning devices. 4,197,610, Cl. 15-383.000.
Schneider, William E., to United States of America, Navy. Pump piston with flexible member. 4,197,787, Cl. 92-129.000.
Schoefberger, Georg: *See*—
Frei, Alfred; Moser, Helmut; Schoefberger, Georg; and Schweizer, August, 4,198,268, Cl. 162-162.000.
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; Brombach, Heinz; and Woppel, Dieter, to BASF Aktiengesellschaft. Shaft for simultaneously winding a plurality of rolls of strip material. 4,198,007, Cl. 242-56.900.
Scholkens, Bernward: *See*—
Bartmann, Wilhelm; Beck, Gerhard; Lerch, Ulrich; and Scholkens, Bernward, 4,198,429, Cl. 424-305.000.
Scholl, Hans-Joachim; Dieterich, Dieter; Markusch, Peter; and Welte, Rainer, to Bayer Aktiengesellschaft. Process for the production of inorganic-organic synthetic foam materials. 4,198,487, Cl. 521-122.000.
Scholtis, Walter: *See*—
Ehedy, Gustav; Kemter, Heinz; Ponitz, Wilfried; Ehrlich, Engelbert; Politze, Walter; Scholtis, Walter; and Wunsch, Wolfgang, 4,197,723, Cl. 66-85.00A.
Schopper, Heinrich-Christian, to Bayer Aktiengesellschaft. Method of recording and playing back video signals on magnetic tape. 4,198,662, Cl. 360-33.000.

Schranz, Karl-Wilhelm: *See*—
Credner, Hans-Heinrich; Otto, Rigobert; and Schranz, Karl-Wilhelm, 4,198,239, Cl. 430-566.000.
Schraud, Alfred: *See*—
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Schreiber, William L.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joaquin; Kiwala, Jacob; and Schreiber, William L., 4,198,309, Cl. 252-174.110.
Schrepfer, Hans J.; Siegel, Hardo; and Theobald, Hans, to BASF Aktiengesellschaft. Manufacture of α-formylethanephosphonic acid esters. 4,198,354, Cl. 260-968.000.
Schreyer, Kenneth D.: *See*—
Borowiec, Richard A.; and Schreyer, Kenneth D., 4,198,174, Cl. 403-44.000.
Schroeter, Siegfried H.: *See*—
Moore, James E.; Orkin, Ona V.; and Schroeter, Siegfried H., 4,198,465, Cl. 428-409.000.
Schroff, Ludwig: *See*—
Merger, Franz; Strohmeyer, Max; Sandrock, Gerhard; Hohenschutz, Heinz; Schroff, Ludwig; and Nestler, Gerhard, 4,198,531, Cl. 568-793.000.
Schubert & Salzer: *See*—
Bock, Erich, 4,197,696, Cl. 57-18.000.
Schulman, Joseph H.; and Kie Sioe Tan, Jozef I., to Pacesetter Systems, Inc. Implantable human tissue stimulator with memory protect means. 4,197,850, Cl. 128-419.0PG.
Schultz, Matti I., to McDonnell Douglas Corporation. Thrust controlled drilling apparatus. 4,198,180, Cl. 408-9.000.
Schumacher, Frank A., to General Electric Company. Household refrigerator including a vacation switch. 4,197,717, Cl. 62-213.000.
Schwartz, Reinhard; and Schelhas, Peter, to Robert Bosch GmbH. Supplementary air valve for a fuel supply apparatus. 4,197,823, Cl. 123-119.00D.
Schweitzer Industrial Corporation: *See*—
Bradshaw, Norman F., 4,197,714, Cl. 62-94.000.
Schweizer, August: *See*—
Frei, Alfred; Moser, Helmut; Schoefberger, Georg; and Schweizer, August, 4,198,268, Cl. 162-162.000.
Scintrex Limited: *See*—
Robbins, John C.; and Kinrade, John D., 4,198,568, Cl. 250-459.000.
Scott, Henry J.; and Scott, Lenore, to Anjar, Inc. Multi compartment game board. 4,198,047, Cl. 273-1.00R.
Scott, Lenore: *See*—
Scott, Henry J.; and Scott, Lenore, 4,198,047, Cl. 273-1.00R.
Scott Paper Company: *See*—
Singh, Balbir; and Pinhak, Ernest M., 4,197,774, Cl. 83-374.000.
Scott, Richard D., to RCA Corporation. Apparatus for developing photographic images on an emulsion coated film. 4,198,145, Cl. 354-83.000.
Seed, Geofrey; Hodgson, Donald; and Grime, Colin J., to United Kingdom Atomic Energy Authority. Liquid metal cooled nuclear reactor constructions. 4,198,271, Cl. 176-38.000.
Seefried, Carl G., Jr.: *See*—
Drake, Kenneth; Hoy, Kenneth L.; and Seefried, Carl G., Jr., 4,198,488, Cl. 521-137.000.
Seger, Ronald G.; Trombley, Wayne E.; and Jacobson, Lawrence R., to Dow Corning Corporation. Contact lens. 4,198,132, Cl. 351-160.00R.
Seidel, Michael C.; and Crook, Evan H., to Warren-Teed Laboratories, Inc. Dissolution of gallstones. 4,198,396, Cl. 424-81.000.
Seifullaeva, Zhalya M. K.: *See*—
Aliev, Vagab S.; Rizaev, Ramiz G. K. O.; Gadzhi-Kasumov, Veli S. M. O.; Ter-Sarkisov, Beniamin G.; Talyshinsky, Rashid M.; Pilaeva, Lidia P.; and Seifullaeva, Zhalya M. K., 4,198,536, Cl. 585-626.000.
Seiger, Harvey N.; and Terjesen, Thomas T., to Yardney Electric Corporation. Method of charging a vented alkaline electrolyte-containing electrochemical cell. 4,198,594, Cl. 320-43.000.
Sekiya, Fukuo: *See*—
Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,198,579, Cl. 307-247.00A.
Sekizawa, Yasuharu: *See*—
Koeda, Takemi; Tsuruoka, Takashi; Shibata, Uichi; Asaoka, Hiroyasu; Hachisu, Mitsugu; Itoh, Osamu; Sekizawa, Yasuharu; Inouye, Shigeharu; and Niida, Taro, 4,198,416, Cl. 424-266.000.
Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Cationic amine-functional copolymers and aqueous baths containing the same. 4,198,495, Cl. 525-328.000.
Semiconductor Research Foundation: *See*—
Nishizawa, Jun-ichi, 4,198,645, Cl. 357-22.000.
Sentementes, Thomas J.: *See*—
Dow, Judith A.; Sentementes, Thomas J.; Homer, Horace H.; and Shaffer, John W., 4,198,199, Cl. 431-360.000.
Sephton, Hugo H.: *See*—
Valdes-Krieg, Ernesto; King, Judson; and Sephton, Hugo H., 4,198,297, Cl. 210-44.000.
Serinken, Nur M.; and Baraff, David R., to Northern Telecom Limited. Displays using thick film switches to control individual display elements. 4,198,630, Cl. 340-784.000.
Serio, Giovanni: *See*—
Verhoeven, Martinus C. M.; Kersten, Andrianus M.; and Serio, Giovanni, 4,198,587, Cl. 313-402.000.
Shaffer, John W.: *See*—
Dow, Judith A.; Sentementes, Thomas J.; Homer, Horace H.; and Shaffer, John W., 4,198,199, Cl. 431-360.000.
Shafranovsky, Alexandr V.; Olevsky, Viktor M.; Chubukov, Vladimir K.; and Baskov, Jury A. Apparatus for heat-mass exchange processes with participation of liquid. 4,198,360, Cl. 261-90.000.
Shafranovsky, Alexandr V.; Ruchinsky, Vitaly R.; Olevsky, Viktor M.; Gavrilin, Vladimir P.; Chubukov, Vladimir K.; Gromoglasova, Valentina N.; Bushev, Vladimir S.; Baskov, Jury A.; Kurkovskaya, Violetta V.; Gurkov, Boris A.; and Evkin, Ivan F. Film-type rotary mass-and heat exchange column. 4,198,361, Cl. 261-89.000.
Shah, Atul, to Parker-Hannifin Corporation. Hose coupling joint. 4,198,079, Cl. 285-245.000.
Shah, Pinakin M., to United States of America, Navy. Seawater battery. 4,198,474, Cl. 429-6.000.
Shah, Raj: *See*—
Sekmakas, Kazys; and Shah, Raj, 4,198,495, Cl. 525-328.000.
Shaneyfelt, Leon J., Jr.: *See*—
Moss, Charles A.; Shaneyfelt, Leon J., Jr.; and Hunter, Charley W., 4,197,988, Cl. 235-449.000.
Shapiro, David: *See*—
Reach, Roy W.; Kahn, William M.; and Shapiro, David, 4,198,684, Cl. 364-900.000.
Sharp Kabushiki Kaisha: *See*—
Yasunaga, Tatsuhiro; and Fujii, Masaru, 4,198,664, Cl. 360-73.000.
Sharpe, Robert: *See*—
Hudson, Derek; Sharpe, Robert; Szelke, Michael; MacIntyre, Iain; and Fink, George, 4,198,398, Cl. 424-177.000.
Sharpe, Thomas R.: *See*—
Cherkofsky, Saul C.; and Sharpe, Thomas R., 4,198,421, Cl. 424-273.00R.
Shassere, Fred A. Mounting rack for guns and the like. 4,197,951, Cl. 211-64.000.
Shattock, Geoffrey F. Microbiological processes to produce fuel gas. 4,198,211, Cl. 48-197.00A.
Shaw, David N., to Dunham-Bush, Inc. Tri-level multi-cylinder reciprocating compressor heat pump system. 4,197,719, Cl. 62-324.000.
Shaw, Graham C.: *See*—
United States of America, National Aeronautics and Space Administration; Shaw, Graham C.; and McIntosh, Meldon J., 4,198,209, Cl. 23-302.00R.
Shaw, Robert: *See*—
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Sheldrake, Charles W.: *See*—
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Shell Oil Company: *See*—
Kim, Leo; and Tang, Sunny C., 4,198,352, Cl. 260-604.0HF.
Shepherd, Robert G., to American Cyanamid Company. 4-(Monoalkylamino)phenyl carbinols and ester derivatives. 4,198,522, Cl. 560-250.000.
Sheppard, Colin J. R., to National Research Development Corporation. Scanning microscopes. 4,198,571, Cl. 250-571.000.
Sherlock, Hugh P.: *See*—
Ciupke, Werner W.; Runyan, Steven R.; and Sherlock, Hugh P., 4,198,134, Cl. 352-129.000.
Sherwood, Theodore R., to United States of America, Navy. Pin protector. 4,197,945, Cl. 206-328.000.
Shibanuma, Tadao: *See*—
Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; Yamazaki, Atsuki; Tamazawa, Kazaharu; Murase, Kiyoshi; and Shibanuma, Tadao, 4,198,339, Cl. 549-89.000.
Shibata, Uichi: *See*—
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Shibusawa, Mitsuo: *See*—
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Shigematsu, Takashi: *See*—
Sawada, Daisaku; Shigematsu, Takashi; and Takeda, Yuji, 4,197,821, Cl. 123-117.00A.
Shill, Wilson T. Birthing bath. 4,197,838, Cl. 128-66.000.
Shimada, Hiroshi: *See*—
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Shimizu Harbor Const. Corp.: *See*—
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Shimizu, Haruo: *See*—
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Shimizu, Masami; and Koike, Takaaki, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Shaft sealing device for turbocharger. 4,198,063, Cl. 277-79.000.
Shimoda, Eitaro, to Sakae Tsushin Kogyo Co. Ltd. Dial apparatus. 4,197,765, Cl. 74-553.000.
Shimoda, Michio: *See*—
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Shinoda, Tsutae: *See*—
Yamashita, Hideo; Andoh, Shizuo; and Shinoda, Tsutae, 4,198,585, Cl. 313-218.000.

Shinohara, Toshio; and Fujimori, Ryo, to Olympus Optical Co., Ltd. Electrophoretic apparatus. 4,198,284, Cl. 204-299.00R.
Shinohara, Toshio: *See—*
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Shioiri, Takayuki; Kawai, Nobutaka; and Ban, Masatoshi, to Sanwa Kagaku Kenkyusho Co., Ltd.; and Shioiri, Takayuki. Piperidenylmethylidene phosphonylamidines. 4,198,510, Cl. 546-22.000.
Shiozaki, Shigeru: *See—*
Mitsuishi, Yukio; Shiozaki, Shigeru; and Murakami, Hitoshi, 4,198,458, Cl. 428-212.000.
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Siemens Aktiengesellschaft: *See—*
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Kleinschmidt, Peter, 4,198,618, Cl. 367-94.000.
Laber, Hans, 4,198,628, Cl. 340-650.000.
Lesche, Wolfgang, 4,198,575, Cl. 328-133.000.
Lewin, Arthur, 4,197,855, Cl. 128-653.000.
Paulke, Monika; Hohmann, Eugen; and Nickel, Bernd, 4,197,641, Cl. 433-32.000.
Prestele, Karl, 4,197,859, Cl. 128-720.000.
Schlichte, Max, 4,198,546, Cl. 370-58.000.
Siempelkamp Giesserei GmbH & Co.: *See—*
Ostendorf, Hermann; and Warnke, Ernst P., 4,197,754, Cl. 73-781.000.
SIG Schweizerische Industrie-Gesellschaft: *See—*
Tuns, Josef, 4,198,166, Cl. 366-112.000.
Siiter, Donald H. Identification locket. 4,197,665, Cl. 40-365.000.
Sillars, Frederick S., to USM Corporation. Inside side-seam soldering machine. 4,197,976, Cl. 228-43.000.
Silva, Robert M.: *See—*
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Silverberg, Morton, to Xerox Corporation. Photoconductive belt assembly. 4,198,155, Cl. 355-16.000.
Simes Societa Italiana Medicinali e Sintetici S.p.A.: *See—*
Ferrari, Giorgio, 4,198,344, Cl. 260-397.250.
Simko, James F. Insulating jacket for bottles. 4,197,890, Cl. 150-2.200.
Simmen, Armin, to BBC Brown Boveri & Company, Limited. Device for packing liquid crystal cells. 4,197,946, Cl. 206-332.000.
Simon, Helmut: *See—*
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Simpkins, Ligaya M.: *See—*
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Singer Company, The: *See—*
Marsh, Walter H. W., 4,197,803, Cl. 112-77.000.
Singer, Norman S.; and Murray, David W., to John Labatt Limited. Modified gluten product and process. 4,198,438, Cl. 426-549.000.
Singh, Balbir; and Pinhak, Ernest M., to Scott Paper Company. Traveling cutter assembly. 4,197,774, Cl. 83-374.000.
Slabic, John P. Camping bed for station wagon. 4,197,600, Cl. 5-118.000.
Sloop, Conrad B. Camera-holding frame. 4,198,150, Cl. 354-293.000.
Smejkal, Hellmuth; and Zajicek, Ernst, to Voest-Alpine Aktiengesellschaft. Blowing lance media-supply arrangement. 4,198,035, Cl. 266-226.000.
Smelser, James M. Apparatus for drilling holes in "H" beams. 4,198,181, Cl. 408-42.000.
Smith, Edward E.; and Stelmashuk, Philip J., to Motch & Merryweather Machinery Company, The. Dual spindle NC chucking-/turning machine. 4,197,769, Cl. 82-3.000.
Smith, Hosea E., to Exxon Research & Engineering Co. Floating head support system for shell and tube heat exchanger. 4,197,907, Cl. 165-76.000.
Smith International, Inc.: *See—*
Crase, Gary M., 4,198,104, Cl. 308-139.000.
Smith, Kendall S., II: *See—*
Bell, Gordon D.; Bratton, Ronald E.; Kennedy, Robert J., Jr.; Smith, Kendall S., II; and Kaye, Roger A., 4,197,611, Cl. 16-116.00R.
Smith, Richard M. Method and apparatus for stabilizing the tension of musical instrument strings. 4,197,780, Cl. 84-458.000.
Smith, Tommy L. Coacting wheel ball projecting device. 4,197,827, Cl. 124-78.000.
Smith, Wayne A.: *See—*
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Smiths Industries Limited: *See—*
Meredith, James F.; and Williams, Brian, 4,198,021, Cl. 244-194.000.
SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
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Snider, David R.; and Graham, J. Clifford, to Graham-Snider Energy Systems. Process for methane and ammonia extraction from organic waste. 4,198,292, Cl. 210-12.000.
Societe Anoayme de Telecommunications: *See—*
Arnaud, Claude J.; Quemner, Jean M.; and Roche, Gaston P., 4,198,374, Cl. 422-111.000.
Societe Civile Hydromer: *See—*
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Societe Francaise d'Equipements pour la Navigation Aerienne: *See—*
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Coulomb, Pierre, 4,198,655, Cl. 358-109.000.
Societe Nationale Elf Aquitaine (Production): *See—*
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Sodini, Charles G.: *See—*
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Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; and Tawara, Ikuo, to Olympus Optical Co., Ltd. Pipette exchange apparatus. 4,198,483, Cl. 435-286.000.
Sokol, Phillip E.; and Farmer, Robert F., to Gillette Company, The. Latent image printing and development. 4,198,445, Cl. 427-140.000.
Solender, Peter E.: *See—*
Wheelwright, Robert W.; and Solender, Peter E., 4,197,777, Cl. 84-1.030.
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Sony Corporation: *See—*
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Matsuda, Atsushi; Kishigami, Jun; and Nishimura, Masaaki, 4,198,550, Cl. 179-181.00F.
Ohmori, Masayuki, 4,198,591, Cl. 315-371.000.
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Sperry Rand Corporation: *See—*
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Spessard, Lewis C.: *See—*
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Spiro, Earl M.; and Falcone, Basil J., to Pan American Gyro-Tex Corporation. Trim and molding strip and the method of forming same. 4,198,455, Cl. 428-126.000.
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Spyrou, Elias: *See—*
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Stahlwerke Peine-Salzgitter Aktiengesellschaft: *See—*
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Stanzione, Louis A.: *See*—
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Stark, Fred J., Jr., to Rubber Research Elastomerics, Inc. Fire resistant, expanded styrene polymer material. 4,198,485, Cl. 521-55.000.

Stark, Rudolf: *See*—
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Staton, Thomas R., to American Building Maintenance Industries. Holiday control unit. 4,198,576, Cl. 307-141.800.

Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, to AGFA-Gevaert, A.G. Reproducing of interspersed motion-picture scenes and still shots. 4,198,136, Cl. 352-169.000.

Steddum, Riddle E.: *See*—
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Steinberger, Josef, to Paul Forkardt Kommanditgesellschaft. Power-operated chuck. 4,198,067, Cl. 279-121.000.

Steinlein, Rudi: *See*—
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Stenehjem, Willis J., to Associated P & C Engineers, Inc. Distance-measuring apparatus. 4,197,748, Cl. 73-490.000.

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Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,198,136, Cl. 352-169.000.

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Sterzer, Fred, to RCA Corporation. Hyperthermia applicator. 4,197,860, Cl. 128-804.000.

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Stevenson, Robert: *See*—
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Steyr-Daimler-Puch Aktiengesellschaft: *See*—
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Stibbe, Paul H., to W. R. Grace & Co. High velocity web floating air bar having an internal passage for transverse air discharge slot means. 4,197,971, Cl. 226-97.000.

Stine, Laurence O.: *See*—
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Stites, David G., to Bell & Howell Company. Microfilm reader/printer with normally open and removable glass flat assembly. 4,198,137, Cl. 353-23.000.

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Stone, Arthur. Automatic golf ball teeing device. 4,198,054, Cl. 273-201.000.

Stoneleigh Trust, Donald P. Massa and Fred M. Dellorfano, Trustees, The: *See*—
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Storm, Roger S., to Carborundum Company, The. One-step curing method for manufacture of neutron absorbing plates. 4,198,322, Cl. 252-478.000.

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Stowell, Donald E.; Jackson, R. Tom; and Bendig, Larry L., to Conoco, Inc. Production of high strength alumina spheres by hydrogelling corresponding slurries. 4,198,318, Cl. 252-448.000.

Stoychev, Tzanko S.: *See*—
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Straitz, John F., III, to Combustion Unlimited Incorporated. Flares for waste gas disposal. 4,198,198, Cl. 431-202.000.

Stran Corporation: *See*—
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Streubel, Hans; and Marti, Heinrich, to Schloemann-Diemag AG; and Concast AG. Support guide arrangement for a continuous casting installation. 4,197,904, Cl. 164-448.000.

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Suchy, Edward C. Ball valve lubricating apparatus. 4,197,924, Cl. 184-65.000.

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Sugahara, Eisuke, to Nippon Piston Ring Co., Ltd. Air clutch with centrifugal force cancellation device. 4,197,930, Cl. 192-88.00B.

Sugihara, Yasumasa, to General Corporation, The. Digital signal recording system. 4,198,663, Cl. 360-40.000.

Sugimoto, Koichi: *See*—
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Matsugo, Ryuzo; and Matsugo, Ryuzo, 4,198,151, Cl. 354-298.000.

Summers, Daniel. Dust separating equipment. 4,198,290, Cl. 209-144.000.

Sunbeam Corporation: *See*—
Benty, John L., 4,198,558, Cl. 219-370.000.
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Crowley, George C., 4,198,557, Cl. 219-370.000.
Vieceli, Joseph L.; and Mysicka, James C., 4,197,791, Cl. 99-339.000.

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Sunrich Mercantile Corp.: *See*—
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Suzuki, Kentaro: *See*—
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Suzuki, Toshimasa; Matsuyama, Chiaki; Ogawa, Susumu; Itoh, Yoshitaka; and Usui, Yasuo, to Mitsubishi Jukogyo Kabushiki Kaisha; Daido Concrete Co., Ltd.; and Shimizu Harbor Const. Corp. Factory barge for manufacturing reinforced elongated concrete products. 4,197,623, Cl. 29-33.00D.

Svirklys, Ferdinand M., to Extrados Company Limited. Fence structure. 4,198,034, Cl. 256-65.000.

Swanson, Howard B., Jr.: *See*—
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Swartz, Dorian J., to American Hospital Supply Corporation. Membrane support structure for electrochemical sensing probe. 4,198,280, Cl. 204-195.00P.

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Alvarez, Francisco S., 4,198,336, Cl. 260-239.55D.
Alvarez, Francisco S., 4,198,403, Cl. 424-241.000.
Edwards, John A.; and Alvarez, Francisco S., 4,198,404, Cl. 424-243.000.
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T. Sendzimir, Incorporated: *See—*
Verbickas, Robert C.; and Turley, John W., 4,197,731, Cl. 72-242.000.
Taguchi, Tetsuya; Tamura, Shuichi; and Okuno, Youichi, to Canon Kabushiki Kaisha. Photographic data printing device. 4,198,146, Cl. 354-106.000.
Tahara, Tooru, to Takigen Seizou Co., Ltd. Key operated switch lock assembly. 4,198,552, Cl. 200-44.000.
Takagi, Toshinori; and Morimoto, Kiyoshi, to Futaba Denshi Kogyo K.K. Apparatus for forming compound semiconductor thin-films. 4,197,814, Cl. 118-726.000.
Takahashi, Katsuji: *See—*
Ariga, Nagao; Yamamoto, Minoru; Takahashi, Katsuji; and Mizuno, Takehisa, 4,198,340, Cl. 260-346.300.
Takahashi, Sankichi: *See—*
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Takahashi, Souya: *See—*
Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; Horikoshi, Ichiro; and Takahashi, Souya, 4,197,697, Cl. 368-315.000.
Takahata, Kazunori; and Hasui, Hiroshi, to Mitsui Petrochemical Industries Ltd. Process for producing linear unsaturated dimers of α-alkyl styrenes. 4,198,535, Cl. 585-406.000.
Takanashi, Itsuo: *See—*
Miyoshi, Tadayoshi; Nakagaki, Shintaro; Takanashi, Itsuo; Motoyama, Koichiro; Yokokawa, Sumio; and Miyazaki, Kenichi, 4,198,592, Cl. 315-382.000.
Takasue, Takashi: *See—*
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Takatsu, Haruyoshi: *See—*
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Takayama, Hisao, to Nippon Aviotronics Company, Limited. Electron beam exposure system. 4,198,569, Cl. 250-492.00R.
Takeda Chemical Industries, Ltd.: *See—*
Imanishi, Masayuki; Masuoka, Yutaka; and Nakajima, Ryoko, 4,198,514, Cl. 546-216.000.
Takeda, Yuji: *See—*
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Takimoto, Masatami, to Toyota Jidosha Kogyo Kabushiki Kaisha. Control system for secondary transfer port in dual carburetor. 4,198,356, Cl. 261-23.00A.
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Tamazawa, Kazaharu: *See—*
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Tamura, Humio: *See—*
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Tanaka, Asami. Coating composition containing a liquid glycol. 4,198,243, Cl. 106-19.000.
Tanaka, Hiromitsu: *See—*
Enomoto, Satoru; Asano, Kiro; Tamura, Humio; and Tanaka, Hiromitsu, 4,198,405, Cl. 424-242.000.
Tang, Sunny C.: *See—*
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Tano, Eiichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Display device in camera view finder. 4,198,148, Cl. 354-289.000.
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Laslo, Joseph A.; Tarhan, Mehmet O.; Sheldrake, Charles W.; and Kwasnoski, Daniel, 4,198,386, Cl. 423-574.00R.
Tarzia, Giorgio; and Panzone, Gianbattista, to Gruppo Lepetit S.p.A. Aminopyrrole derivatives. 4,198,502, Cl. 542-414.000.
Tashiro, Yasuhisa; Nagashima, Takashi; Aoki, Shigeru; and Nishizawa, Rinzo, to Nippon Kayaku Kabushiki Kaisha. Optically active amino acid-mandelic acid complexes. 4,198,524, Cl. 562-470.000.
Tatian, Berge; Hudgin, Richard H.; and Nisenson, Peter, to Itek Corporation. Method and apparatus for obtaining the doppler transform of a signal. 4,198,125, Cl. 350-162.0SF.
Tawara, Ikuo: *See—*
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; and Tawara, Ikuo, 4,198,483, Cl. 435-286.000.
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Teijin Limited: *See—*
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Te Nijenhuis, Anne: *See—*
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Terral, Ben D., to Camco, Incorporated. Protector for a deflector guide of a mandrel. 4,197,909, Cl. 166-117.500.
Ter-Sarkisov, Beniamin G.: *See—*
Aliev, Vagab S.; Rizaev, Ramiz G. K. O.; Gadzhi-Kasumov, Veli S. M. O.; Ter-Sarkisov, Beniamin G.; Talyshinsky, Rashid M.; Pilaeva, Lidia P.; and Seifullaeva, Zhalya M. K., 4,198,536, Cl. 585-626.000.
Tetard, Jean-Claude, to Compagnie Industrielle des Telecommunications. Transmission by gears with divided trains. 4,197,758, Cl. 74-410.000.
Tetra Pak International AB: *See—*
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Textron, Inc.: *See—*
Johnson, Dwight N., 4,197,809, Cl. 116-275.000.
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Th. Goldschmidt AG: *See—*
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Theobald, Hans: *See—*
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Thomas & Betts Corporation: *See—*
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Thomas, David V. Plant, shrub and tree protector garden panel. 4,197,673, Cl. 47-26.000.
Thomas, Doris: *See—*
Thomas, William J.; and Thomas, Doris, 4,197,832, Cl. 126-390.000.
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Ost, Walter; and Thomas, Klaus, 4,198,410, Cl. 424-250.000.
Thomas, Wesley L. Telephone set with improved hook switch mechanism. 4,198,548, Cl. 179-100.00R.
Thomas, William J.; and Thomas, Doris. Baking pan insulator. 4,197,832, Cl. 126-390.000.
Thomma, Lothar: *See—*
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Thompson, Craig B.: *See—*
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Barnhouse, James L., 4,197,912, Cl. 166-305.00R.

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Barnhouse, James L., 4,197,912, Cl. 166-305.00R.
Thompson, Philip M.: *See*—
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Thompson, Vern C., to Ideus, Inc. Hydraulic valve. 4,197,878, Cl. 137-625.660.
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Thornton, Richard D.: *See*—
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Thumm, Helmut, to Sauter Feinmechanik GmbH. Workpiece shaping apparatus. 4,197,770, Cl. 82-14.00C.
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Thyssen Edelstahlwerke AG: *See*—
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Ticker, Arthur; and Preiser, Herman S. Method and apparatus for molding and replicating minute surface characteristics. 4,198,362, Cl. 264-40.100.
Tieke, Otto: *See*—
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Titus, Theodore, IV, to Lanier Business Products, Inc. Multiplexed central dictation system. 4,198,549, Cl. 179-100.1DR.
Titze, Gunther: *See*—
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Todd, John J. Apparatus for gasification of liquids. 4,198,359, Cl. 261-77.000.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See*—
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Tokyo Sanyo Electric Co., Ltd.: *See*—
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Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
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Tominaga, Anri: *See*—
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Tominaga, Shinji; and Ueda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Out-of-range indication device for automatic diaphragm control. 4,198,141, Cl. 354-46.000.
Toms, Ed P., to Water-Cyk Corporation, The. Water recycling with solids and foam removal. 4,197,597, Cl. 4-300.000.
Tomy Kogyo Co., Inc.: *See*—
Kurita, Toshiaki, 4,198,049, Cl. 273-119.00A.
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
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Treiber, Laszlo R.; and Gullo, Vincent P., to Merck & Co., Inc. Process for purifying thienamycin. 4,198,338, Cl. 260-326.310.
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Tri-Chem de Puerto Rico, Inc.: *See*—
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Triplex Safety Glass Company Limited: *See*—
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Trombe, Felix; and Michel, Jacques, to Agence Nationale de Valorisation de la Recherche (ANVAR). Dwellings equipped with natural air conditioning installations. 4,197,993, Cl. 126-429.000.
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Trudel, Roger. Method and apparatus for supplying fuel to an internal combustion engine. 4,197,820, Cl. 123-34.00R.
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Tsai, Kuo L. Water-saving toilet bowl. 4,197,599, Cl. 4-424.000.
Tsao, Utah, to Lummus Company, The. Coal gasification effluent treatment. 4,198,212, Cl. 48-210.000.
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Tsiang, Chong L., to Colt Industries Operating Corp. Circuit means and apparatus for controlling the air-fuel ratio supplied to a combustion engine. 4,197,822, Cl. 123-119.0EC.
Tsukamoto, Kenkichi. Audio amplifier. 4,198,610, Cl. 330-253.000.
Tsuruoka, Takashi: *See*—
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Tuns, Josef, to SIG Schweizerische Industrie-Gesellschaft. Device for shaking packages containing powdery or granular material. 4,198,166, Cl. 366-112.000.
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Turner, George F. A. M., to Ciba-Geigy AG. X-ray film cassette. 4,198,009, Cl. 242-71.700.
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Tytell, Alfred A.; Scattergood, Edgar; and Field, Arthur K., to Merck & Co., Inc. Replacement of animal serum proteins by human albumin for growth and interferon production by Namalva cells. 4,198,479, Cl. 435-2.000.
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Uhlig, Herbert K.; and Waldron, Clifford R., to Bendix Corporation, The. Electrical contact retention bushing method of making. 4,197,804, Cl. 113-119.000.
Ullmann, Roland; and Zimmermann, Klaus, to Braun AG. Synthetic-resin and metallic layered watchband. 4,197,968, Cl. 224-178.000.
Ullom, Lawrence C. Shortening device. 4,197,615, Cl. 24-68.00F.
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Process for producing antibiotic baumycin complex and components. 4,198,480, Cl. 435-78.000.
Underground Surveys Corporation: *See*—
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Undin, Hans, to C. A. Weidmuller K.G. Device for stripping the sheathing from the ends of insulated electrical conductors. 4,197,768, Cl. 81-9.50A.
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Army: *See*—
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Murray, James B., 4,198,017, Cl. 244-83.00G.
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Shah, Pinakin M., 4,198,474, Cl. 429-6.000.
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U.S. Philips Corporation: *See—*
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University of Arizona Foundation, The: *See—*
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Morton, Douglas R., Jr., 4,198,525, Cl. 562-471.000.

Urbanek, Karel, to Dominion Auto Accessories Limited. Resilient support for lamp. 4,198,027, Cl. 248-634.000.

Ushijima, Fumihiro: *See—*
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,198,195, Cl. 418-133.000.

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Sillars, Frederick S., 4,197,976, Cl. 228-43.000.

Ustin, George, to North American Philips Corp. Bi-pin fluorescent lampholder and contact. 4,198,109, Cl. 339-50.00R.

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Uyeda, Tim M., to La Gard, Inc. Combination locks. 4,197,726, Cl. 70-332.000.

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Vajna, Sandor, to Sandor Vajna. Process for increasing the exchange yield in ion exchange processes. 4,198,295, Cl. 210-25.000.

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Valeh, Seyed M. H. Mechanical energy device. 4,197,925, Cl. 185-9.000.

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Bailey, Kurt W.; and Juengel, Richard O., 4,197,650, Cl. 33-143.00L.

van der Meulen, Leonard. Apparatus for the manufacture of bags. 4,198,259, Cl. 156-498.000.

Van Haften, John L.: *See—*
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Vanjushkina, Tatyana A.: *See—*
Lishevskaya, Marina O.; Morin, Boris P.; Stanchenko, Galina I.; Vanjushkina, Tatyana A.; and Rogovin, Zakhar A., 4,198,326, Cl. 260-17.4GC.

Van Steenwyk, Donald H.; Cash, John R.; and Ott, Paul W., to Applied Technologies Associates. Survey apparatus and method employing all latitude, all attitude gyrocompassing. 4,197,654, Cl. 33-304.000.

Varnum, Tracy L.; and Livezey, Robert L., Jr. General purpose electronic thermometer having selective data recovery, data conversion, and data derivation capabilities. 4,198,676, Cl. 364-557.000.

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Konsetov, Vitaly V.; Kozlova, Galina I.; Orlova, Valentina G.; Dokukina, Ljudmila F.; Deryagina, Galina M.; Pavlova, Tatyana N.; Gavrichenkova, Eleonora A.; and Vasilieva, Natalia P., 4,198,383, Cl. 422-134.000.

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Verbatim Corporation: *See—*
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Verbickas, Robert C.; and Turley, John W., to T. Sendzimir, Incorporated. Rolling mill capable of increased torque transmission. 4,197,731, Cl. 72-242.000.

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Sage, Paul, 4,197,881, Cl. 139-59.000.

Verhoeven, Martinus C. M.; Kersten, Andrianus M.; and Serio, Giovanni, to U.S. Philips Corporation. Color CRT shielding cone having four metal plates extending from corners of smaller aperture to wall coating. 4,198,587, Cl. 313-402.000.

Vetter, Hans; Puschel, Walter; Melzer, Arnfried; and Peters, Manfred, to AGFA-Gevaert, A.G. Dye diffusion transfer process employing compounds that release sulfonamide dye providing radicals. 4,198,235, Cl. 430-222.000.

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Victor Company of Japan, Limited: *See—*
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Miyoshi, Tadayoshi; Nakagaki, Shintaro; Takanashi, Itsuo; Motoyama, Koichiro; Yokokawa, Sumio; and Miyazaki, Kenichi, 4,198,592, Cl. 315-382.000.

Vieceli, Joseph L.; and Mysicka, James C., to Sunbeam Corporation. Electric steamer. 4,197,791, Cl. 99-339.000.

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Vilkomerson, David H. R.: *See—*
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Vinals, Joaquin: *See—*
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Vitale, Gina G.: *See—*
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Vitzthum, Otto; and Hubert, Peter, to Studiengesellschaft Kohle mbH. Process for the production of spice extracts. 4,198,432, Cl. 426-312.000.

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Vockenhuber, Peter, to Bolex International S.A. Varifocal lens system with three moving components. 4,198,129, Cl. 350-187.000.

Voest-Alpine Aktiengesellschaft: *See—*
Scheurecker, Werner, 4,197,903, Cl. 164-448.000.
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Vogt, Alfred; Veith, Bernd; and Ruttiger, Anton, to Preh, Elektrofeinmechanische Werke, Jakob Preh Nachf GmbH & Co. Remote control receiver. 4,198,620, Cl. 340-171.0PF.

Vogt, B. Richard; and Simpkins, Ligaya M., to E. R. Squibb & Sons, Inc. Pyrazolo [1,5-C] quinazoline derivatives and their use in treating allergic conditions. 4,198,412, Cl. 424-251.000.

Voith Turbo GmbH & Co., KG: *See—*
Freiberg, Bernd-Rainer; Gehl, Wilfried; Liebe, Jurgen; and Muschelknautz, Horst, 4,197,742, Cl. 73-362.0CP.

Volkswagenwerk Aktiengesellschaft: *See—*
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Volpi, Claudio, to Massey-Ferguson Services N.V. Control linkage. 4,197,761, Cl. 74-481.000.

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von der Eltz, Hans-Ulrich; Lehmann, Joachim W.; Ungermann, Erwin; Humuller, Edwin; Keil, Karl-Heinz; and Ribka, Joachim, to Hoechst Aktiengesellschaft. Short liquor dyeing process for piece goods, made from cellulose fibers, in rope form. 4,198,204, Cl. 8-21.00R.

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Von Jan, Wolfgang; and Gravemann, Horst, to Kabel-und Metallwerke Gutehoffnungshuette AG. Molds for continuous casting of metals. 4,197,902, Cl. 164-418.000.

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Olcott, Tyler K.; and Miller, Robert M., 4,198,452, Cl. 428-68.000.
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Waagner-Biro Aktiengesellschaft: *See—*
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Wade, Peter C., to E. R. Squibb & Sons, Inc. Substituted 2,3-naphthimidazole carbamates and method. 4,198,422, Cl. 424-273.00B.

Wadensten, Theodore S.; and Carocci, Alfred, to Vibco, Inc. Air blaster or air accumulator and quick dump apparatus. 4,197,966, Cl. 222-1.000.

Wadsworth, Charles, to Hoffmann-La Roche Inc. Determination of immunologically active materials and system therefore. 4,198,389, Cl. 424-8.000.

Waeselynck, Michel; Gerbel, Lucien; and Corbefin, Rene, to Societe Nationale Elf Aquitaine (Production). Device for direct and continuous receiving and measuring of electrical magnetic and acoustic signals. 4,198,596, Cl. 324-344.000.

Wagner, Henry N.; and Wake, Robert H., to Bios Inc. Nuclear cardiac blood volume detecting apparatus. 4,197,836, Cl. 128-654.000.

Wahlquist, Glenn F.: *See—*
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Wakabayashi, Nobuaki: *See—*
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Waldron, Clifford R.: *See—*
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Walker, George A.; Sperry, Leavenworth P.; and Sutherland, Robert B., to Waterbury Companies, Inc. Container support. 4,198,020, Cl. 248-154.000.

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Wallbillich, Guenter: *See—*
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Wallshein, Melvin. Bent wire orthodontic spring clip. 4,197,642, Cl. 433-11.000.

Walter, Henry J.; and Kunz, Raymond W., to Clairol Incorporated. Heat retaining appliance. 4,198,559, Cl. 219-387.000.

Walter, Herbert: *See—*
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Walters, James F.: *See—*
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Wang Laboratories, Inc.: *See—*
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Ward, Gerald G.: *See—*
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Warner-Lambert Company: *See—*
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Warner, Paul L., Jr.; and Luber, Edward J., Jr., to Westwood Pharmaceuticals Inc. Process for preparing 4-substituted imidazo[1,2-a]quinoxalines. 4,198,508, Cl. 544-346.000.

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Waterbury Companies, Inc.: *See—*
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Webb, James W. Heat insulator for turbocharger. 4,198,192, Cl. 417-373.000.

Weber, Marcel, to Samibem, S.A. Mower comprising cutter discs driven from beneath. 4,197,692, Cl. 56-13.600.

Weber, Otto; Keck, Volkmar; and Engelking, Rolf, to Volkswagenwerk Aktiengesellschaft. Air intake pipe for an internal combustion engine. 4,197,922, Cl. 181-229.000.

Weber, William R. Hydraulic actuator cushioning device. 4,197,785, Cl. 91-468.000.

Wehr Corporation: *See—*
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Weikel, Maurice M. Dental alloy container. 4,197,943, Cl. 206-219.000.

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Whiteley, Isaac C. Meat tenderizing device and method. 4,197,613, Cl. 17-52.000.

Whitley, Thomas J., to Bunker Ramo Corporation. Filter contact. 4,198,613, Cl. 333-181.000.

Whitson, Donald W., to All-Phase Electronics Inc. Power driven sweeper. 4,197,607, Cl. 15-4.000.

Wicks, David J. Adjustable reclining chair. 4,198,095, Cl. 297-320.000.

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Wilhelmsson, Gunnar R., to AB Svenska Flaktfabriken. Arrangement for the exchange of filter elements. 4,198,216, Cl. 55-341.00R.

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Williams, Anthony M., to EMI Limited. Rotary drive systems. 4,197,755, Cl. 74-84.00R.

Williams, Brian: *See*—
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Williams, Meurig W.; and AuClair, Christopher J., to Xerox Corporation. Method of using electrostatographic toner composition with surfactant. 4,198,477, Cl. 430-120.000.

Williams, Robert E., to Exxon Production Research Company. Apparatus for removing suspended oil droplets from water. 4,198,300, Cl. 210-170.000.

Williams, Robert W. Semi-automatic revolver. 4,197,784, Cl. 89-155.000.

Williams, Thomas A.: *See*—
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Williamson, Terence J., to Mather & Platt Limited. Pool brazing apparatus for manufacturing rotor cages. 4,197,975, Cl. 228-48.000.

Williamson, Thomas D., to Du Pont de Nemours, E. I., and Company. Wet tow crimping process. 4,197,622, Cl. 28-267.000.

Wilson, Malcolm C., to United States of America, Navy. Floating canard with geared tab. 4,198,016, Cl. 244-3.210.

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Windmoller & Holscher: *See*—
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Winiasz, Michael E., to Clark-Reliance Corp., The. Pressure reducing valve. 4,197,877, Cl. 137-625.300.

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Wood, Ronald P., to General Electric Company. Condensation preventing arrangement for interior of a household refrigerator. 4,198,222, Cl. 62-272.000.

Woodling, George V. Rotary piston machine with wear surface on rotary valve member. 4,198,194, Cl. 418-61.00B.

Woodruff, Kenneth A., to Hagie Manufacturing Co. Detasseling device depth adjusting control system and method. 4,197,691, Cl. 56-10.200.

Woodruff, Kenneth A.: *See*—
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Worley, Arthur C.; and Zboray, James A., to Exxon Research & Engineering Co. Gas distributor for fluidized bed coal gasifier. 4,198,210, Cl. 48-77.000.

Wright, Donald C.; and Marsh, Brian, to Pilkington Brothers Limited. Method and apparatus for controlling a fluidized bed. 4,198,226, Cl. 65-114.000.

Wu, Chung P., to RCA Corporation. Pulsed laser irradiation for reducing resistivity of a doped polycrystalline silicon film. 4,198,246, Cl. 148-1.500.

Wu, Hai; and Heintz, Walter K., to Ford Motor Company. Floating ring fuel injector valve. 4,197,997, Cl. 239-102.000.

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Yagi, Michio; Shiozawa, Kazuo; Suzuki, Kijiro; Aratame, Kazuhisa; Ishihara, Haruji; and Shimokawa, Ryushi, to Konishiroku Photo Industry Co., Ltd.; and Hitachi, Ltd. Power supply resetting circuit for camera. 4,198,142, Cl. 354-60.00R.

Yamada, Seiichiro, to Yamaha Hatsudoki Kabushiki Kaisha. Synchronizing device for wire-activated mechanisms. 4,197,763, Cl. 74-501.50R.

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Hirabayashi, Shigeyoshi; and Otsuki, Chihiro, 254,742, Cl. D18-4.000.
Shortino, Vincent M., to Ethyl Development Corporation. Bottle or similar article. 254,711, 4-15-80, Cl. D9-143.000.
Shortino, Vincent M., to Ethyl Development Corporation. Bottle or similar article. 254,712, 4-15-80, Cl. D9-143.000.
Shortino, Vincent M., to Ethyl Development Corporation. Bottle or similar article. 254,713, 4-15-80, Cl. D9-143.000.
Star Seimitsu Kabushiki Kaisha: *See*—
Mitumori, Yoshio, 254,727, Cl. D10-116.000.
Mitumori, Yoshio, 254,728, Cl. D10-116.000.
Mitumori, Yoshio, 254,729, Cl. D10-116.000.
Mitumori, Yoshio, 254,730, Cl. D10-116.000.
Mitumori, Yoshio, 254,731, Cl. D10-116.000.
Sulek, Eugene J.: *See*—
Lawrence, William J.; Sulek, Eugene J.; and Hawkins, William R., 254,723, Cl. D10-57.000.
Swingline, Inc.: *See*—
Barrett, Edward E.; Lensky, Albert; Costello, John C.; and Pulos, Arthur J., 254,706, Cl. D8-49.000.
Tawil, Abraham I., to H.I.T. Industries Ltd. Auxiliary suitcase or similar article. 254,698, 4-15-80, Cl. D3-71.000.
Texas Instruments Incorporated: *See*—
Lawrence, William J.; Sulek, Eugene J.; and Hawkins, William R., 254,723, Cl. D10-57.000.
Tomy Kogyo Co., Inc.: *See*—
Ogihara, Masaru, 254,746, Cl. D21-177.000.
Tridon Limited: *See*—
Blaiklock, William M., 254,701, Cl. D6-114.000.
Tsuji, Masao; and Muller, Ronald L., to North American Philips Corporation. Juicer. 254,702, 4-15-80, Cl. D7-49.000.
Twindicator Designs, Inc.: *See*—
Cassedy, Sean; and Cassedy, Nancy V., 254,724, Cl. D10-59.000.
United States Surgical Corporation: *See*—
Hirsch, Leon C.; Rawson, Paul O.; and Nagy, Louis E., 254,726, Cl. D10-60.000.
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CLASSIFICATION OF PATENTS

ISSUED APRIL 15, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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78.1 4,198,093
165 4,198,089

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320 4,198,095

CLASS 298

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CLASS 299

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8 : 254,704
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13 : 254,697
17 : 254,714
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39 : 254,700
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41 : 254,752
44 : 254,724
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49 : 254,755
55 : 254,750

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